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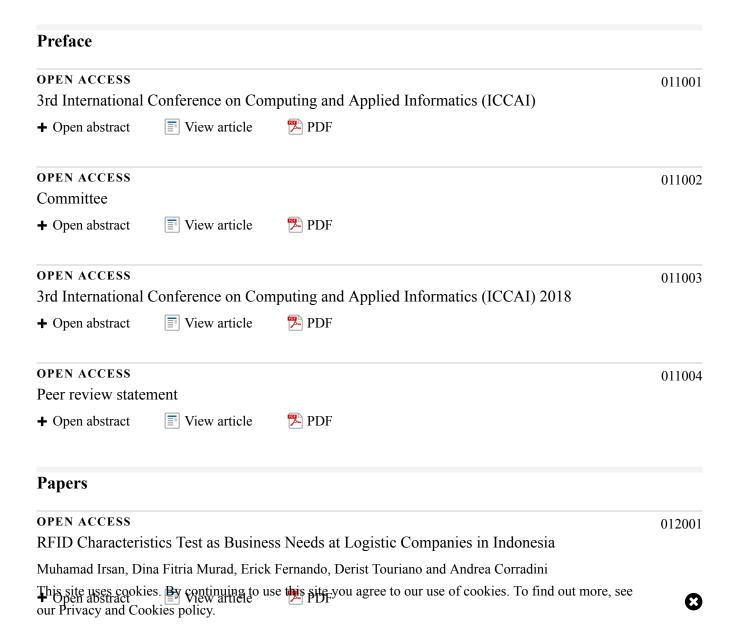
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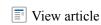


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United Kingdom Physics and Astronomy (miscellaneous) Physics and Astronomy (miscellaneous)  Ads by Google Stop seeing this ad Why this ad  PUBLICATION TYPE ISSN COVERAGE  Journals 17426588, 17426596	COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER
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SCOPE

TI	he open access Journal o	of Physics.	Conference S	Series (JPCS	S) provides a fast	versatile and c	ost-effective pro	aceedings publication	I SE

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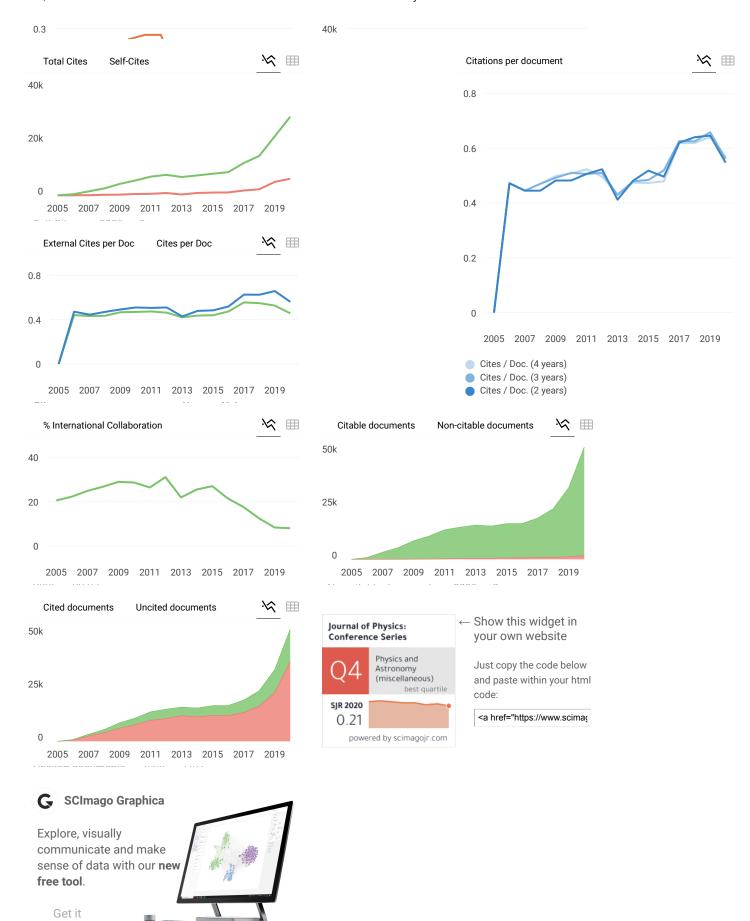
Quartiles

SJR



**Total Documents** 





#### Metrics based on Scopus® data as of April 2021

#### A Arcadius Benawa 4 weeks ago

How about publication in ScitePress? Is it indexed by Scopus? My paper which I presented in Ebic 2019 has been published in ScitePress publication in 2021 and so my paper which I have presented in IC2LC Binus 2018 has been published in ScitePress in 2021. Thank you for your attention. I wait eagerly for your respon. Thank you very much.

reply



#### Melanie Ortiz 3 weeks ago

Dear Arcadius, thank you very much for your comment. We suggest you consult the Scopus database directly. Best Regards, SCImago Team

#### Ren 3 months ago

Hi,, how long does an article published in JPCs will appear in scopus? Waiting for your reply

reply



# Melanie Ortiz 2 months ago

Dear Ren,

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you contact Scopus support:

https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/Best Regards, SCImago Team

SCImago Team

SCImago Team

#### A Alexandr Kupershtokh 3 months ago

This "Journal of Physics: Conference Series" is classified as Journal in SCOPUS.

However, in SCOPUS SEARCH by Authors, all my articles published in this journal are marked as Proceedings in list publications.

Please, correct the information in SCOPUS SEARCH.

Sincerely yours,

Alexandr Kupershtokh

reply

#### A Amz 3 months ago

Dear Alexandr,

At scopus it already declare as conference proceeding



# Melanie Ortiz 3 months ago

ű

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you contact Scopus support:

https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/Best Regards, SCImago Team

#### S Sheetal Jagdale 9 months ago

This "Journal of Physics: Conference Series" is classified as Journal in SCOPUS october 2020 list.

Even in https://www.scopus.com/sources it is listed in Journal

But the SCImago has mentioned conference.

Kindly guide

reply

# S Samar Ghazal 7 months ago

Dear,

SCImago Team

I already saw all comments below, the fact is that the Journal of Physics: Conference Series is still classified as a journal in Scopus (30/1/2021). Can you check it with Scopus, please?

Thank you so much

Regards,

Samar



SCImago Team

SCImago Team

Dear Samar,

Thank you for contacting us.

As said below, Scopus sent us a request to change the publication type from

"Journal" to "Conference and Proceedings" last August.

For further information, you need to contact Scopus Support Team here:

https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/

SCImago Team

SCImago Team

Best Regards, SCImago Team



Melanie Ortiz 9 months ago

Dear Sheetal,

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

#### Н Huda 10 months ago

Please, I have a question about the IOP Journal of Physics magazine from which quarter?

reply



Melanie Ortiz 10 months ago

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

#### M MD SARFARAZ ALAM 11 months ago

Dear Huda,

Dear,

SCImago Team

In scopus website when I am checking this JPCS is coming under journal section not conference preceedings.

I think SCImago team needs to modify this satus here and change it into journal category not proceedings. If you are following SCOPUS coverage.

Regards, Dr. S. Alam JMI University reply

#### J jose daniel 10 months ago

Dear,

SCImago Team

I already saw all comments below, the fact is that the Journal of Physics: Conference Series is still classified as journal in scopus (11/11/2020). Can you check it with scopus please? This confusion can lead to many problems for authors



#### Melanie Ortiz 10 months ago

SCImago Team

Dear Jose,

Thank you for contacting us. As said previously, Scopus sent us a request yo change the publication type from "Journal" to "Conference and Proceedings" a few months ago.

For further information, you need to contact Scopus Support Team here: https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/

Best Regards, SCImago Team



#### Melanie Ortiz 11 months ago

SCImago Team

Dear Dr. S. Alam,

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

#### A Albert King 11 months ago

Dear SCImago Team

I got my article published in "Journal of Physics: Conference Series" in June 2020. At that time it was classified as 'Journal'on scimagojr website. But now it has been changed to 'Conference Proceeding'.

Can you please provide a proof that it was a "journal" type publication and later it got changed to 'Conference Proceeding'. Thank you

reply

SCImago Team

SCImago Team



Melanie Ortiz 11 months ago

Dear Albert,

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you contact Scopus support as all our metadata have been provided by them:

https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/Best Regards, SCImago Team

#### A Anderson Sandoval 12 months ago

Reviewing the new classification reported on this web platform, I see with surprise that this journal was eliminated from the assignment of quartiles, while other proceeding journals still continue with the classification of journal and assignment of quartiles. Which leads me to wonder:

Why does this happen?

Is there discrimination in the process?

Why isn't everyone treated the same equally?

Where is the level playing field?

Is there the status favouring of some of these proceedings for belonging to large publishers?

I would like to know the reasons why this journal was removed from the classification by quartiles and why other proceeding journals did not suffer the same treatment.

Staying tuned

Cordially,

reply



Melanie Ortiz 12 months ago

Dear Anderson,

Thank you for contacting us. As said below, SCImago calculates the SJR data for all the publication's types, but the Quartile's data are only calculated for Journals and Book Series. SCImago does not decide if a publication has to be classified as a Conference and proceedings, journal or book serie. It is Scopus who proceeds to classify the publication types. Therefore, you need to contact Scopus regarding this matter here: https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/

Best regards, SCImago Team



Nasir Za'ba 1 year ago

Dear SCImago Team

I have seen the comment below and the SCImago Team's explanation. I would like to know, what is

the publication type for old articles of JPCS that were published before this status changes? Are my old articles still classified as JOURNAL or CONFERENCES

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Nasir,

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you contact Scopus support:

https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/Best Regards, SCImago Team

#### D Dr. Jawad Alzaidi 1 year ago

Dear team of journal... Please answer for me clearly. If journal has Q and sitescore in scopus now?...I Read all the comments above and not found clear answer..... Best regards

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Dr. Jawad,

Thank you very much for your comment.

You need to consult the Scopus database directly to see the CiteScore.

Best Regards, SCImago Team

#### R Restu 1 year ago

Why does the coloured quartile graph is not shown on this page? It used to be shown buy why did it dissapear?

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Restu,

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

### K Kadir Kadir 1 year ago

Please be informed, in July 2020, "Journal of Physics: Conference Series" still has a Q3 quartile, why is there currently no quartile (written not yet assigned quartile)

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Kadir,

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

# R Rana 1 year ago

Now I am checking this journal in scopus preview . This journal still called journal of physics there isn't any change in name

reply

### H Hoang Van Ngoc 1 year ago

Please tell me the Q of this magazine? Why not see it here? thanks

reply



# Melanie Ortiz 1 year ago

SCImago Team

Dear Hoang,

Thank you for contacting us. Please see comments below.

Best Regards, SCImago Team

# S Sergey 1 year ago

Good day!

Why was the quartile removed from the Journal of Physics: Conference series, if it was declared in the Scopus database as Journal of Publication?

reply

SCImago Team



#### Melanie Ortiz 1 year ago

Dear Sergey,

Thank you for contacting us. This publication type has been recently changed from "Journal" to "Conference and Proceedings", after receiving a change order by Scopus last week

Best regards, SCImago Team

#### A Anna Voroshilova 1 year ago

Dear colleagues,

The status of the journal has just been updated to no quartile assigned. But a month ago when the database for 2019 was upated it showed Q3. Now it is even not seen that it has had Q3 for years. Hoe can you explain it?

reply

# S Sergey 1 year ago

On the scopus site, this journal still belongs to the type of publication - journal. Ilya I don't understand something?



## Melanie Ortiz 1 year ago

Dear Anna,

Thank you for contacting us. This publication type has been recently changed from "Journal" to "Conference and Proceedings", after receiving a change order by Scopus. We calculate the SJR data for all the publication's types, but the Quartile's data are only calculated for Journals and Book Series.

Best regards, SCImago Team

# J Jean Pierre Uwiringiyimana 1 year ago

What is the cost of publishing an article in the Journal of Physics: Conference Series?

reply



# Melanie Ortiz 1 year ago

Dear Jean Pierre, thank you very much for your comment, we suggest you look for that information in the website or contact the editorial staff. Best Regards, SCImago Team

SCImago Team

SCImago Team

### Nismon Rio 1 year ago

Is this Indexed in Scopus Database?

When i checked it is not listed.

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Nismon,

Thank you very much for your comment.

All the metadata have been provided by Scopus /Elsevier in their last update sent to SCImago, including the Coverage's period data. The SJR for 2019 was released on 11 June 2020. We suggest you consult the Scopus database directly to see the current index status as SJR is a static image of Scopus, which is changing every day.

Best Regards, SCImago Team

# Rio Aurachman 1 year ago

Today is already June. But the new rank not released yet. Could you please send the spesific date when will the the new SJR will be released. Thank you before

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Thank you for contacting us. Our data come from Scopus, they annually send us an update of the data. This update is sent to us around April / May every year. Therefore, the indicators for 2019 will be available throughout this month (June 2020) but we can not tell you a specific day. Best regards, SCImago Team



#### Saiqa Khan 1 year ago

Dear Rio,

Please tell me impact factor?

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Saiqa, thank you very much for your comment.

SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR.

The next update will be made throughout June 2020. We suggest you consult the Journal

Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team



#### Ahmad Fauzi 1 year ago

why the journal (physics) has Q3 while material science and engineering (https://www.scimagojr.com/journalsearch.php?q=19700200831

reply



#### Melanie Ortiz 1 year ago

SCImago Team

Dear Ahmad,

Thank you for contacting us. We calculate the SJR data for all the publication types, but the Quartile data are only calculated for Journal type's publications. Best regards, SCImago Team

# karrar Imad Abdulsahib Al-Shammari 1 year ago

Dear Sir/Madam,

I have article titled 'Influence of dietary epigallocatechin-3 gallate and Larginine and its combination on early laying performance and physiological status of stressed Japanese quails' which have been published in IOP Conf. Series: Journal of Physics: Conf. Series 1294 (2019) 092014. This article is not inclded in Scopus Preview, although the journal is registered in Scopus database.

I am looking forward to hearing from you

reply



### Melanie Ortiz 1 year ago

SCImago Team

Dear Sir,

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you to contact directly with Scopus support:

https://service.elsevier.com/app/answers/detail/a\_id/14883/kw/scimago/supporthub/scopus/Best Regards, SCImago Team

### R Rose 2 years ago

Dear SCImago Team,

It is stated in the JPCS homepage that the journal is a proceeding publication (https://iopscience.iop.org/journal/1742-6596). Is it valid and common for proceeding publication

to have Q3 rank over years in scopus? Looking forward for you explanation.

reply

SCImago Team



#### Melanie Ortiz 2 years ago

Dear Rose,

Thank you for contacting us.

As you probably already know, SJR is a portal with scientometric indicators of journals indexed in Scopus. All the data have been provided By Scopus /Elsevier. This fact implies that Scopus sends us an annual update of their publications and their metadata. If Journal of Physics: Conference Proceeding appears as a "Journal publication's type " it means that Scopus has categorized it like this. In addition, we have to say that the metadata belongs to Scopus, thus SCImago doesn't have the authority over this data which are exclusively property of Scopus/Elsevier. SCImago has a signed agreement that limits our performance to the generation of scientometric indicators derived from the metadata sent in the last update.

Referring the indicators, we inform you that we calculate the SJR data for all the publication types, but the Quartile data are only calculated for Journal type's publications. Best regards, SCImago Team

# Dian Handayani 2 years ago

Dear editor,

We intend to a held conference in the medical and health science scope. Is that possible for us to send our full paper that has been presented (oral presentation) to be published in this journal as proceeding?

Many thanks, looking forward for your favorable feedback

Regards,

Dian

reply

SCImago Team



# Melanie Ortiz 2 years ago

Dear Dian,

thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus. Unfortunately, we cannot help you with your request, we suggest you to contact the journal's editorial staff, so they could inform you more deeply. Best Regards, SCImago Team



#### La Zakaria 2 years ago

I would like to ask you about Sjr for 2019.

reply



#### Melanie Ortiz 2 years ago

SCImago Team

Dear La Zakaria ,The indicators for 2019 will be available in June 2020 and before that we can't know what will happen whith with this journal . Best Regards, SCImago Team

#### J Jorge Moreno 2 years ago

Dear Editorial Board,

I have a question: I am an author of this journal and I need the paper to be included in OpenAIRE, to then include it in my EC project. I have been looking for it but I couldn't find it. Could you help me with some instructions?

Thanks a lot for your help!

Jorge

reply



#### Melanie Ortiz 2 years ago

SCImago Team

Dear Jorge,

thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you to contact the journal's editorial staff, so they could inform you more deeply. Best Regards, SCImago Team

# H HÜSEYİN KALKAN 2 years ago

Hello Dear Authorized

Which indexes are your journal entitled "Journal of Physics: Conference Series". I need this information I'll be glad if you help with this. Yours truly. Dr. Hüseyin KALKAN

reply

SCImago Team



Melanie Ortiz 2 years ago

Dear HÜSEYİN,

thank you for contacting us.

Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage or contact the journal's editorial staff, so they could inform you more deeply. Best Regards, SCImago Team

# S Sirwan 2 years ago

Dear this journal why is not in the Thomson Reuters?

reply



#### Melanie Ortiz 2 years ago

SCImago Team

Dear Sirwan, SCImago Journal and Country Rank uses Scopus data, our impact indicator is the SJR. Check our web to locate the journal. We suggest you to consult the Journal Citation Report for other indicators (like Impact Factor) with a Web of Science data source. Best Regards, SCImago Team

# ThangNguyen 2 years ago

Dear, Editorial Board!

Our paper was published in the Journal of Physics: Conference Series, 11/2019. But now, we cannot find it on site Scopus.com. Question to you: is this paper was included in the scopus database or not?

Thank you very much!

reply



# Melanie Ortiz 2 years ago

SCImago Team

Dear Thang,

thank you for contacting us.

Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you to contact the journal's editorial staff , so they could inform you more deeply. Best Regards, SCImago Team

# T tamara 2 years ago

we participate in 2nd international conference and our paper was published in journal of physics: conference series ,2019

I ask: did this journal stay in rank Q3 in 2019.

reply



#### Melanie Ortiz 2 years ago

SCImago Team

Dear Tamara, the publication of articles referring to 2019 is not over yet (we are in December), and much less it has been possible to cite unpublished articles. The 2019 indicators will not be available until June 2020. We cannot see what will happen in the future with this journal.Best Regards, SCImago Team

# S Sri Wahyuningsih 2 years ago

Dear, The Editorial Board,

I have a publication in Journal of Physics: Conference Series. But I have a problem, because my name in the journal is wrong. Is it possible to fix it?

Thank you for your attention

Best regards

reply



# Melanie Ortiz 2 years ago

SCImago Team

Dear Sri,

thank you for contacting us.

Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you to contact the journal's editorial staff , so they could inform you more deeply. Best Regards, SCImago Team

### J Jnana Ranjan Senapati 2 years ago

I have a publication in Journal of Physics: conference series. Whether it will be considered as a journal or conference proceeding?

reply

## A ahmed abed 2 years ago

dear Jnana Ranjan Senapati as shown in in the Publication type (upper the page) it is JOURNAL

SCImago Team



# Melanie Ortiz 2 years ago

Dear Jnana,

thank you for contacting us.

Unfortunately, we cannot help you with your request, we suggest you to contact the journal's editorial staff, so they could inform you more deeply.

Best Regards, SCImago Team

## A Archana Varsoliwala 2 years ago

Dear, Editorial Board.

This "Journal of Physics: Conference Series" is classified as 'Journal' or 'Conference Proceeding'? I am confused about this. So kindly reply and try to remove my confusion.

Thank you.

Regards,

reply

## MD SARFARAZ ALAM 2 years ago

Dear Archana Varsoliwala

I have checked on the SCOPUS website and got the result JPCS will consider as a Journal. You can also check this information in this link: https://www.scopus.com/sources.uri

Regard

Md. Sarfaraz Alam Research Scholar IIT Guwahati (India)

Melanie Ortiz 2 years ago

SCImago Team

Dear Archana,

You can see the Publication type just above. Best Regards, SCImago Team

# Minetaka Sugiyama 3 years ago

Dear Ms. Elena Corera,

I am sorry to ask you such a basic question but only some papers in Journal of Physics conference series can be found in PubMed.

Is it possible to search and see other papers in PubMed?

Sincerely yours, Minetaka Sugiyama

reply

#### Igor V. Bogachkov 3 years ago

I see my papers (Journal of Physics: Conference Series, 2018, v. 1015) in "Web of Sc.", but cannot see ISI or Quartile in WoS! Q3 is only Scopus, or WoS too?

- 1. Bogachkov I. V. Detection of initial level of Brillouin frequency shift in optical fibres of different types // Journal of Physics: Conference Series, 2018, v. 1015 (2018). pp. 1 6. DOI: 10.1088/1742-6596/1015/2/022004 WOS:0004469520000004 (ISSN: 1742-6588)
- 2. Bogachkov I. V., Lutchenko S. S. Reliability assessment of fiber optic communication lines depending on external factors and diagnostic errors // Journal of Physics: Conference Series, 2018, v. 1015 (2018). pp. 1 7. DOI: 10.1088/1742-6596/1015/2/022005 WOS:000446952000005 (ISSN: 1742-6588)

Wait your answer, best regards.



Elena Corera 3 years ago

Dear Minetaka,

thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact journal's editorial staff so they could inform you more deeply. You can find contact information in SJR website https://www.scimagojr.com

Anyway, if there is any user who has already published in the journal, maybe could help us with your request.

Best Regards, SCImago Team SCImago Team

# W Wahyu Widada 3 years ago

Dear The Editorial Board, Please provide information, why is Volume 1088 incomplete uploaded? Thank you.

reply



## Elena Corera 3 years ago

Dear Wahyu Widada,

thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact journal's editorial staff so they could inform you more deeply. You can find contact information in SJR website https://www.scimagojr.com

SCImago Team

Best regards, SCImago Team



# Mohammad Faizal bin Hassan 3 years ago

Dear, Editorial Board.

This "Journal of Physics: Conference Series" is classified as 'Journal' or 'Conference Proceeding'? I am a little bit confused about this, as my university recognize this as a Conference Proceeding (not Journal), but SCImago (see 'Publication type' above) classified it as a Journals.

Your clarification is highly appreciated.

Thank you.

Regards,

Mohammad Faizal Postgraduate Student (PhD) Universiti Putra Malaysia (UPM) Malaysia

reply

#### MD SARFARAZ ALAM 2 years ago

Dear Mohammad Faizal bin Hassan

I have checked on the SCOPUS website and got the result JPCS will be considered as a Journal. You can also check this information SCOPUS website in this link:

https://www.scopus.com/sources.uri

Regard

Md. Sarfaraz Alam Research Scholar IIT Guwahati (India)

SCImago Team



Melanie Ortiz 2 years ago

Thanks for your participation! Best Regards, SCImago Team



Elena Corera 3 years ago

SCImago Team

Dear Mohammad, SJR is a portal with scientometric indicators of journals indexed in Scopus. SJR has no authority over the data of the journals; they are the ones that Scopus sends us. So we have informed Scopus of the changes you are proposing and we will wait for the response to update the data of your journal. Best Regards, SCImago Team

S sunarti 3 years ago

hello

how about the price if i want to submit in this journal?

reply



Elena Corera 3 years ago

SCImago Team

Dear Sunarti,

thank you very much for your comment, unfortunately we cannot help you with your request. We suggest you look for author's instructions in the journal's website. Best Regards,

SCImago Team

| Ikhlasul Ardi Nugroho 3 years ago

Dear The Editorial Board,

 $\hbox{My Director Assistance said that Journal of Physics: conference series is not a reputated journal} \\$ 

but a proceeding. Is that correct?

Thank you for your explanation

Best regards

Ikhlasul ardi nugroho Post graduate Yogyakarta State University

reply



## Pavel D. Terekhov 3 years ago

Yes, JPCS is a journal for proceedings publications of different international conferences over the world.



## Elena Corera 3 years ago

thank you very much for your comment. You can use our data to analyze the journal. It has been in Q3 for years and the value of the SJR has been decreasing over the years. Best Regards,

SCImago Team

SCImago Team

Dear Ikhlasul,

#### Leave a comment

Name

#### Email

(will not be published)

I'm not a robot	reCAPTCHA Privacy - Terms
	I'm not a robot

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

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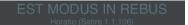
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## **PAPER • OPEN ACCESS**

# Implementation of Augmented Reality in Pretend Play Therapy for Children with Autism Spectrum Disorder

To cite this article: M F Syahputra et al 2019 J. Phys.: Conf. Ser. 1235 012104

View the <u>article online</u> for updates and enhancements.

# Recent citations

- Yu-Chen Huang and I-Jui Lee



# Implementation of Augmented Reality in Pretend Play Therapy for Children with Autism Spectrum Disorder

M F Syahputra<sup>1</sup>, A P Angkasih<sup>1</sup>, S Purnamawati<sup>1</sup>, U Andayani<sup>1</sup>, D Abdullah<sup>2</sup>, S Sriadhi<sup>3</sup>, A Iskandar<sup>4</sup>, Rosida T M<sup>5</sup>, J Fitriany<sup>6</sup>, I N Sari<sup>7</sup>, M D Utama<sup>8</sup> and R F Nanuru<sup>9</sup>

<sup>1</sup>Department of Information Technology, Faculty of Computer Science and Information Technology, Universitas Sumatera Utara, Medan, Indonesia <sup>2</sup>Department of Informatics, Universitas Malikussaleh, Aceh Utara, Indonesia <sup>3</sup>Department of Electrical Engineering, Universitas Negeri Medan, Indonesia <sup>4</sup>Informatics Engineering, STMIK AKBA, Makassar, Indonesia

E-mail: nca.fadly@usu.ac.id

**Abstract**. Autism Spectrum Disorder is a pervasive developmental disorder that will affect children in terms of interpersonal communication, social interaction, and imaginative levels in play. Many therapies to help the motor neuron performance is one of them Pretend Play. Pretend Play is a therapy that invites children in playing to demonstrate something else and tell how to use objects that are considered in the child's imagination. However, in the era of highly developed technology, many fields have used the Augmented Reality method as a visualization of various aspects. With this method researchers will present the therapeutic visualization of the block to 3D transportation tool that is useful for strengthening motor nerves and visual strength of the child. The system can run well during marker detection, marker movement, and 3D object display with the accuracy of precision angle and distance between virtual world with real world reach 100% with angle 0° at distance 31 cm and the maximum distance from the marker is 46 cm and the maximum angle is 30°.

## 1. Introduction

Many children with autism tend to self-stimulatory, such as hand-flapping, wobbling clapping or repetitive vocalizations [2]. ASD is often found by children due to lack of interpersonal communication and social interaction in children.

With the advent of the world of therapy then comes a therapy called Pretend Play. This therapy is one part of therapy in children with autism that is done at an early stage of healing ASD children low level where the behavior of children who are usually done in the real world will be interpreted in the symbolic form. In this therapy there is usually an object or media as a substitution object of an object to increase motor neuron strength and visual strength of children.

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A new technology called Augmented Reality (AR) is technology that combines what is in reality and what is generated from computer by enhancing what we see, hear, smell and feel[5]. Augmented reality is implemented as the education media and the information media. Augmented reality is the technology which implements computer vision in its process[6]. As the development of the age of Augmented Reality technology that can combine the virtual world with the real world and is often applied by several aspects. Therefore, researchers use the AR method as a visualization of Pretend Play therapy that substitutes a 3D object into a real beam.

## **Identifications of Problems**

ASD suffers who will find it difficult to focus on therapy because the item has been owned by the child and without being taught the usefulness of the object. As well as the lack of sensory and motor nerve strength in the use of load on the hand is very troublesome children with ASD to perform activities like a normal child. Therefore, a method that can be used to visualize the beam will be substituted as a type of object on Pretend Play therapy.

## 2. Previous Research

In 2013, Zhen Bai and his colleagues conducted the study using Augmented Reality method by applying target children with ASIS (Autism Spectrum Conditions) at age 4 - 7 years and have been diagnosed positively with ASC. They make markers in the form of toys that are reflected through a screen that has an effect as a mirror. [1]

Samantha also conducts research in 2014 by applying exergame using virtual reality to increase the motivation of children with autism to exercise weight in order to improve the quality of children's health. [2]

Lakshmiprabha in the same year conducted research on children with autism by applying augmented techniques as well as virtual reality on a guessing therapy image in accordance with the instructions given. [3]

2015 Qingguo Xu conducted research using augmented-reality glass platform method for ASD by installing camera and microphone as input used for job interview. [4]

## 3. Methodology

## 3.1. General architecture

In this research consist of several processes namely input, process, and output. As can be seen in Figure 1.

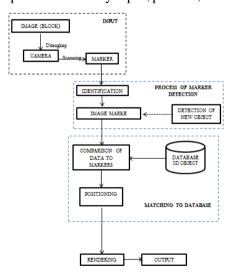


Figure 1. General architecture.

# 3.1.1. Input

Users use markers in the form of images placed on the block as a medium for viewing cars, trains and boats. The base piece that will display the terrain of a track that will be displayed statically in the form of a different virtual object.

## 3.1.2. Process

## a. Marker Detection Process

The scanning marker described in the previous section will go through a scanning process to read the new object contained in the marker as a marker given to the therapeutic process performed. Scene used in therapies such as cars, trains and boats. The process of marker scanning process is:

#### Identification

At this point the marker used in the input section will be interpreted by degrees (X, Y, Z) which will produce the correct image marker for scanning.

# • Identification of New Object

This stage is done to read a new object that will be in accordance with the 3D object database after the marker checking step is done.

## b. Matching to Database

At this stage the marker that has been captured by the camera will match it with the existing virtual database. As for the process contained in matching to the database that is,

# • Comparison of Data on Markers

That is a comparison between markers that have been scanned with existing databases to do the laying of the positioning of objects based on markers that have been scanned.

# Positioning

That is by matching the scale of virtual objects to scale in the real time. And define the appropriate position so that there is a central point contained in the physical object.

## c. Rendering

At this stage will be tracking in the form of hand positioning and marker shift to the central point that has been determined at the positioning stage. And if the information obtained is clear then it will be done rendering that will display the 3D form that has been made.

## 3.1.3. Output

The final step configures all the objects that have been done during processing to the AR system. And the output that will be displayed on this system is a virtual object in 3D that is combined with real world objects that will be displayed on a screen where there is a centralized sync between the virtual world with the real time and implemented in the form of a game.

## 3.2. Used data

In this study the data used are images taken in real time with attention to the distance and angle of shooting of the camera used.

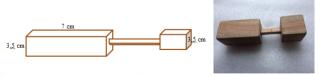


Figure 2. Block size and image block captured camera.

## 3.3. Marker

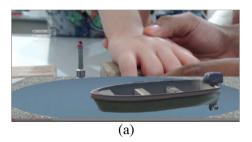
Markers are used as 2D markers in the real world that are pasted on the beam to bring up 3D objects. Marker used in this study can be seen in Figure 3



Figure 3. Marker used.

## 4. Result and discussion

Implementation of the system done by children in the form of a game scene that consists of three scenes. The child's first level uses the beam by means of transportation of the ship, the second level on the train and the last level on the car. In this game the user must pass the track that has been given as shown in Figure 4.



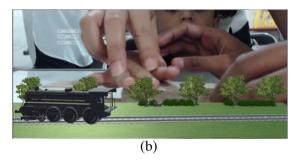




Figure 4. Scene therapy pretend play.

## 4.1. Marker testing

The test is done in two stages: test based on distance, and angle. From this test can be seen whether the marker can be detected by AR CAMERA well so that it can display 3D objects and the laying of the beam has been in accordance with the given track. Testing is done by opening the application, after the application is open then AR CAMERA will detect the existing marker by pointing the camera at the marker. Marker used is a 2D image with a size of 3.5 cm x 3.5 cm. Here is a marker test based on the distance and angle of the camera. The distance test is performed in order to see the maximum distance marker can be detected and see the most effective distance on marker detection.

**Table 1.** Testing by distance on markers.

No	Range	Testing	Detected	Not Detected	Accuracy	Explanation
1.	25 cm	5	5	0	80%	Detected, stable, but the 3D object is not on the given track.
2.	31 cm	5	5	0	100%	Detected, stable, but the 3D object is on the given track.

3.	36 cm	5	4	1	Detected, not stable, but the 3D object is not on the given track.
4.	46 cm	5	2	3	Difficult to detect, unstable, and incompatible with given track.

Marker testing is done in a room with a marker condition not directly highlighted by the lamp vertically. Through this test the marker can be read well by AR CAMERA when it is precisely at 31 cm so it can produce a 3D object according to the given track. And the value of accuracy is 100%.

The camera tilt angle test is performed to determine the most effective angle in marker detection.

**Testing Detected Not Detected Explanation** No Angle Accuracy Detectable, stable, but the 0° 5 5 1. 0 100% 3D objects right on track. Detecable, stable, 3D 5° 2. 5 5 0 80% objects right on track. Detected, less stable, and does not match the given 3. 10° 5 3 2 70% track. Difficult to be detected, object missing sometimes is 5 2 3 4. 30° 30% not stable, and does not correspond to a given track.

**Table 2.** Testing by angle.

In Table 2 the authors tested 4 angles with different levels of accuracy. The result shows that the object will be stable and in accordance with the test if it is at 0° and 5° with stable results, but at 5° angle the 3D object does not match the given track. But at 10° and 30° angles the given object is unstable and does not match the given track because the marker is not fully visible.

# 4.1.1. Survey on system

Conducting a survey of the system aims to get more accurate results from making the system. The authors tested to 3 children with special needs of low level with accompanied by different psychologist. The first thing children do is see how to grip the beam, then with the psychologist hearing the beam until the child raises his own initiative to run the beam in accordance with the given track. After that the psychologist filled in a questionnaire filled based on the suitability of the system with children with ASD.

The questionnaire submitted is matched with Likert scale to get the result which can be seen in Table 3.

Approval Scale	Value
Disagree (TS)	1
Less Agree (KS)	2
Agree (S)	3
Strongly Agree (SS)	4

**Table 3.** Likert scale on questionnaire.

Table 3 is the reference table for the value of each psychologist's answer to the given questionnaire. The questionnaire contains a question of system suitability with the child's motor and visual skills. From the value of the given scale, can be taken the average value based on the questionnaire by summing the

value of each statement divided by the number of respondents (psychologists who fill out the questionnaire). The average value of each statement is described as follows:

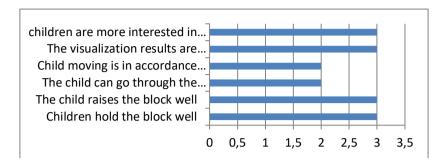


Figure 5. Survey charts in children.

In picture 5 the psychologist gives average value of 3 on the child holding the beam well and the beam well because the beam used is in accordance with the standard usage as media tool for pretend play therapy. While to receive instructions and get through tracks gets value 2 because the child is still confused by the existence of new therapeutic tool. The latter also scored 3 on a convenient visualization result with the child more interested in performing the therapy activities.

## 5. Conclusion

After doing the stages on the implementation and testing, it will be obtained some conclusions contained in this study are:

- The system can run well during marker detection, marker movement, and 3D object display.
- Accuracy of precision angle and distance between virtual world with real world reach 100% with angle 0 at distance 31 cm.
- The maximum distance from the marker is 46 cm and the maximum angle is 30°.

Based on the value of the Likert scale, respondents agree with the value 3 of the maximum value 4 that the child can lift the load and grasp the beam well.

## References

- [1] Bai Z, Blackwell F and Coulouris G 2013 Through the Looking Glass: Pretend Play for Children with Autism
- [2] Finkelstein S, Barnes F, Wartell Z and Suma E 2014 Evaluation of the Exertion and Motivation Factors of a Virtual Reality Exercise Game for Children with Autism 1
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- [5] Agrawal M, Kulkarni A, Joshi S and Tiku N 2015 Augmented Reality Int. J. Advance Research in Computer Science and Management Studies 3 114-122
- [6] Syahputra M F, Siregar R K and Rahmat R F 2017 Finger recognition as interaction media in Augmented Reality for historical buildings in Matsum and Kesawan regions of Medan City. *Lecture Notes in Computer Science* 10325