


MAKING A STATE OF THE ART




Arnaud Deraemaeker
Arnaud.Deraemaeker@ulb.be



1

What a state of the art should not be



2



What a state of the art should not be

A stat-of-the-art **should not be** a collection of paragraphs detailing the content of a set of papers separately

Bad example of a state-of-the-art review :



International Research Journal of Engineering and Technology (IRJET)

Volume: 04 Issue: 03 | Mar -2017

www.irjet.net

e-ISSN: 2395 -0056

p-ISSN: 2395-0072

Seismic Effectiveness of Tuned Mass Damper - A Review

Shilpa Chandran.P¹, Dr. CK Prasad Varma Thampan²

¹PG Student, Department of Civil Engineering, NSS College of Engineering, Palakkad, India

²Professor, Department of Civil Engineering, NSS College of Engineering, Palakkad, India

3

Checking the quality of a paper

A simple search on google scholar

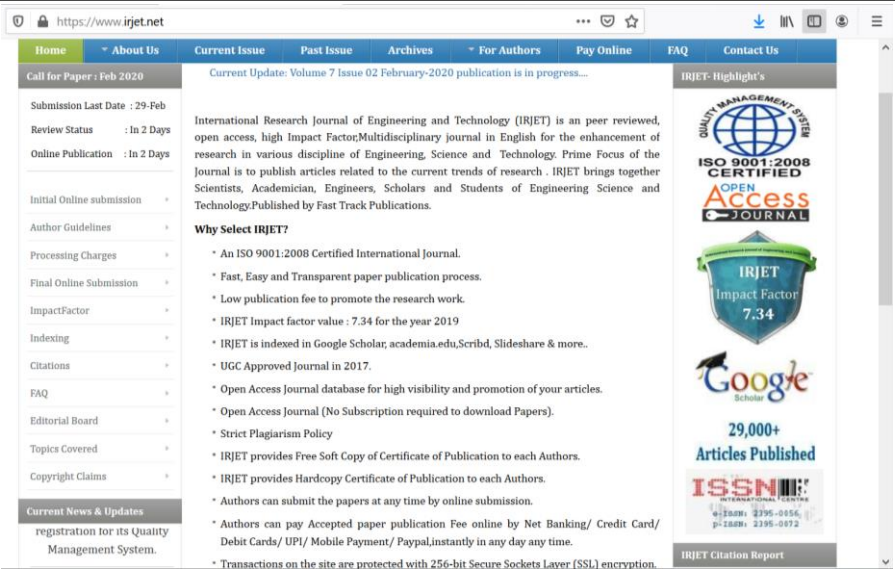
https://scholar.google.fr/scholar?hl=fr&as_sdt=0,5&q=seismic+effectiveness+of+tuned+mass+dampers+-+a+review



→ The paper is not present on google scholar. Be careful ...

4

Checking the quality of a journal

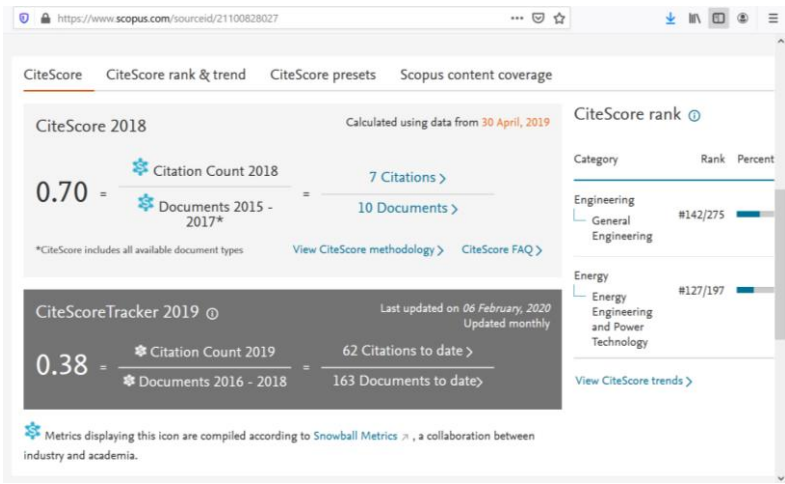


<https://www.irjet.net>

5

Checking the quality of a journal

Information found on scopus

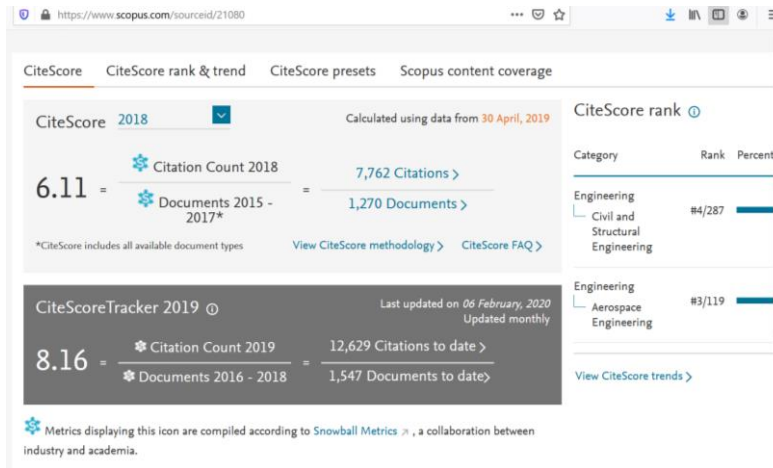


6

Checking the quality of a journal

Comparing with a well established journal :

Mechanical Systems and Signal Processing

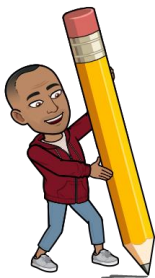


7

What a state of the art should not be

3. LITERATURE REVIEW

Some literature reviewed about TMD in buildings, is presented in this section. There are number of works have been performed on seismic effectiveness of tuned mass damper by different scholars and researchers.



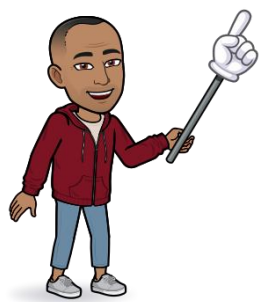
Chi-Chang Lin, Jin-Min Ueng, Teng-Ching Huang(1999), "Seismic response reduction of irregular buildings using passive tuned mass dampers": This paper discussed about the practical considerations and vibration control effectiveness of passive tuned mass dampers (PTMDs). And they applied TMD for irregular buildings, modelled as multi-storey torsionally coupled shear buildings, under bi-directional horizontal earthquake excitations. Its moving direction and optimum installation location are determined from the controlled mode shape values. They calculated optimal system parameters of PTMD's by minimizing the mean-square total modal displacement response ratio of controlled mode between the building with and without PTMD under the earthquake excitation from critical direction. The damper able to reduce the building responses effectively.

- This is **just a summary** of the information found in the paper
- There is **no critical assessment of the relevance** of the paper
- There is **no discussion on limitations, pros and cons** of the methods presented in the paper

8

What a state of the art should not be

3. CONCLUSIONS



Recently use of seismic control systems has increased, but choosing best damper and installing it into a building is very important for reducing vibration in structures when subjected to seismic loading. Passive control systems are reliable and they doesn't require any external power. TMD is one of the best passive dampers.

→ Is there a clear link between these conclusions and the literature review ??

9

What a state of the art should be

A cartoon illustration of a man in a red jacket and blue pants, holding a large magnifying glass.

10

Approach to write a state of the art

Based on the information collected, the state of the art should

- Present the literature review in a **structured way** (type of method/model used, type of application, ...)
- Identify the **applicability/limitations** of the methodologies presented
- Identify **what is lacking** in the literature in order to solve the problem at hand



11

Example





Example of a well-structured state of the art

Hindawi
Shock and Vibration
Volume 2019, Article ID 9273714, 9 pages
<https://doi.org/10.1155/2019/9273714>



Research Article

Robust Optimum Design of Multiple Tuned Mass Dampers for Vibration Control in Buildings Subjected to Seismic Excitation

Luciara Silva Vellar ¹, Sergio Pastor Ontiveros-Pérez ¹, Leticia Fleck Fadel Miguel ¹
and Leandro Fleck Fadel Miguel ²

→ Scopus shows that this journal is clearly more serious.

12

Example : structure of the state of the art

The paper contains 60 references.

Structure of the state-of-the art :

- Origin and type of damping devices
- Types of TMDs
- Application to buildings
- Current limitations (1 mode)
 - Proposed approach to overcome limitation
 - MTMD optimization method
 - Taking into account uncertainties



13

RMCE Homework 2

Based on the 7 summaries produced for homework 1, write a short state of the art on the topic of “*Damage detection in concrete structures under changing operational and environmental conditions*”, focusing on the effect of changing operational and environmental conditions (not the damage detection part)

The SoA should

- Start with an introduction to the context/motivation of the study
- Present in a structured way (there are several options) what has been done before
- Identify what is lacking to introduce what will be done in this project

Homework is due **monday March 18 at 6pm the latest**

14

14

