



RELATÓRIO DE AFASTAMENTO PARA QUALIFICAÇÃO EM NÍVEL DE DOUTORADO

3º Relatório: 3º Semestre – 15 de agosto a 15 de fevereiro de 2019

NAYARA RODRIGUES MARQUES SAKIYAMA

RELATÓRIO das atividades de doutoramento apresentado à Congregação do Instituto de Ciência, Engenharia e Tecnologia, em cumprimento à Resolução CONSEPE 04/2007.

Data de início do afastamento: 15/08/2017

Local: Universidade de Stuttgart - Stuttgart,
Alemanha

STUTTGART, ALEMANHA

Março 2019



1. Descrição do relatório

Atendendo ao artigo 6º da resolução CONSEPE 04 de 10 de outubro de 2007 apresenta-se neste documento o terceiro relatório semestral com as atividades desenvolvidas pela docente NAYARA RODRIGUES MARQUES SAKIYAMA, afastada no período de 15 de agosto de 2017 a 14 de agosto de 2021 para a realização de doutorado na Universidade de Stuttgart (US), Alemanha.

Este documento contém 14 páginas, incluindo os anexos.

2. Atividades desenvolvidas

2.1 Créditos

Em cumprimento à determinação do Comitê da Faculdade 2 da Universidade de Stuttgart e, como previsto no primeiro relatório de afastamento, enviado em março de 2018, nos últimos seis meses cursei a disciplina “Konstruktion und Material” – 6 créditos (Anexo I). Como parte da avaliação da disciplina, uma ponte de papel foi desenvolvida em grupo (Figura 1), sendo essa premiada em duas categorias (Anexo II):

- 1º lugar: desempenho da estrutura (Anexo II-a)
- Prêmio especial: inovação relacionada ao uso do material (Anexo II-b).



a) Processo de fabricação



b) Ponte finalizada

Figura 1 – Ponte de papel desenvolvida para a disciplina “Konstruktion und Material”

2.2 Pesquisa de doutorado

O caso base (edificação) para a realização das análises computacionais passa por fase de modificação/consolidação, modelagem nos programas Grasshopper/Rhinoceros e validação/verificação.

Paralelamente, os materiais a serem considerados na envoltória do caso base têm sido avaliados por meio de experimentos laboratoriais em grande escala (Figura 2) e modelagem numérica no *software* Delphin - simulação higrótérmica.



a) Vista interna

b) Vista externa

Figura 2 - Câmara de teste: durabilidade dos revestimentos quando submetidos à condições externas extremas

2.3 Atividades afins

- Nos dias 26 e 27 de setembro participei do 3º Congresso Internacional de Eficiência Energética em Edifícios Históricos (EEHB2018 - <http://eehb2018.com>), realizado em Visby, Suécia, com apresentação oral de trabalho (Anexo III).
- Como integrante do projeto Wall-ACE (<https://www.wall-ace.eu/>), financiado pela União Europeia (EU), e que tem a Universidade de Stuttgart entre as



instituições envolvidas, participei da reunião semestral do consórcio, realizada nos dias 09 a de outubro 11 de outubro em Chambery, França.

- A interação entre os softwares que têm sido utilizados na pesquisa de doutorado e dados de outros estudos e experimentos realizados no Instituto de Ensaios de Materiais (Materialprüfungsanstalt - MPA) resultou no aceite de três trabalhos a serem apresentados e publicados em congressos internacionais:
 - Central Europe towards Sustainable Building, 2019 (Anexo IV)
 - Building Simulation, 2019 (Anexo V)

3. Considerações finais

Por fim, declaro que me encontro regularmente matriculada como estudante de doutorado na Universidade de Stuttgart (Anexo VI) e coloco-me à disposição da Congregação do ICET para qualquer esclarecimento.

Atenciosamente,

Prof. M.Sc. Nayara Rodrigues Marques Sakiyama

ICET/UFVJM



Anexos

1. Comprovante de matrícula na disciplina “Konstruktion und Material”.
2. Comprovantes da premiação – Construção de ponte em papel da disciplina “Konstruktion und Material”.
 - a. Primeiro lugar na competição – melhor desempenho na prova de carga
 - b. Prêmio especial – desenvolvimento de novo material
3. Programa com as apresentações orais do EEHB 2018
4. Aceite do trabalho enviado ao CESB 2019
5. Aceite dos trabalhos enviados ao BS 2019
6. Comprovantes de matrícula na Universidade de Stuttgart:
 - a. Semestre de verão 2018 (01/04 a 30/09/2018)
 - b. Semestre de inverno 2018/2019 (01/10/2018 até o momento)



1. COMPROVANTE DE MATRÍCULA NA DISCIPLINA “KONSTRUKTION UND MATERIAL”.

Student: [Nayara Rodrigues Marques Sakiyama](#)

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Operations

Academic year: 2018/19

Grouping: [Compulsory subject/elective subject](#) | [Semester](#) | [Study programme only](#)

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Operation: [Course registration](#)

Universitäts Stuttgart

My courses

Academic year: 2018/19

University of Stuttgart									
Course no.	Sem.	Term	Title	Duration	Type	Part/Eval/Info	SPO	resp. org.	Languages of Instruction
1590 06 F21 1 Dr.-Ing. - Fakultät 2 (Promo)			Konstruktion und Material (WS 18/19) Standardgruppe	4	VU		4/12/58	Garrechtl.H. Schwarte., Maack.A. Steffen.S. Ullmann.D	021500 German

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2. COMPROVANTES DA PREMIAÇÃO – CONSTRUÇÃO DE PONTE EM PAPEL DA DISCIPLINA “KONSTRUKTION UND MATERIAL”.

Urkunde

Brückenbauwettbewerb

Konstruktion und Material WS 2018/19

1. Preis

Patrik Glaser

Tim Heiser

Fabian Kotter

Seyedeh Bina

Mohammad Hejazi

Nayara Rodrigues

Marcques Sekiyama

Inna Wiedemann

Brücke aus Papier
möglichst geringes Eigengewicht
bei möglichst großer Traglast

Stuttgart, 07.02.2019

Prof. Dr.-Ing. Harald Garrecht

Institut für
Werkstoffe im Bauwesen
Pfaffenwaldring 4
70569 Stuttgart



Universität Stuttgart

www.iwb.uni-stuttgart.de

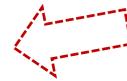


Urkunde

Brückenbauwettbewerb

Konstruktion und Material
WS 2018/19

Sonderpreis PETON



Patrik Glaser

Tim Heiser

Fabian Kotter

Seyedeh Bina

Mohammad Hejazi

Nayara Rodrigues

Marcques Sekiyama

Inna Wiedemann

Brücke aus Papier
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Stuttgart, 07.02.2019

Prof. Dr.-Ing. Harald Garrecht

Institut für
Werkstoffe im Bauwesen
Pfaffenwaldring 4
70569 Stuttgart



Universität Stuttgart

www.iwb.uni-stuttgart.de



3. PROGRAMA COM AS APRESENTAÇÕES ORAIS DO EEHB 2018

15/03/2019

Presentations – EEHB2018



EEHB2018

The 3rd International Conference on Energy Efficiency in Historic Buildings

PRESENTATIONS



Day 1 – Joint session

Ernst Jan De Place Hansen

The European project RIBuild

Understanding the change of heritage values over time and its impact on energy efficiency decision-making at residential historic buildings through system dynamics

Kalliopi Fouseki and Yekatherina Bobrova

efficiency decision-making at residential historic buildings through system dynamics

Ernst Jan de Place Hansen and Kim Bjarne Wittchen

Energy savings due to internal façade insulation in historic buildings



Day 1 – Session 1

Lukas Lång, Pernilla Johansson, Carl-Magnus Capener, Hans Janssen, Jelle Langmans, Eva Møller, Marco D’Orazio and Enrico Quagliarini

Outlining a methodology for assessing deterioration threshold criteria linked to retrofitting historical buildings with internal insulation

Ernst Jan de Place Hansen and **Eva Birgit Møller**

How to estimate material properties for external walls in historic buildings before applying internal insulation

Valentina Marincioni and Hector Altamirano-Medina

Can probabilistic risk assessment support decision-making for the internal insulation of traditional solid brick walls?

Lingjun Hao, Daniel Herrera and Alexandra Troi

The effect of climate change on the future performance of retrofitted historic buildings: A review

Phil Banfill

Hygrothermal properties of NHL mortars

Pär Johansson, Anna Donarelli and **Paulien Strandberg**

Performance of insulation materials for historic buildings: Case studies comparing a super insulation material and hemp-lime

Nayara Sakiyama, Jürgen Frick and Harald Garrecht

Cultural heritage compatible insulation plaster – Analysis and assessment by hygrothermal simulations

Targo Kalamees, Endrik Arumägi and **Üllar Alev**

Performance of interiorly insulated log wall – Experiences from Estonian cold climate conditions

Martin Krus, André Thiel and **Ralf Kilian**

Investigations on the influence of different types of restoration of beam ends of the floor in the Alte Schäfflerei Benediktbeuern

Julien Borderon, Elodie Héberlé, Antoine Cuny and Julien Burgholzer

Investigation on post-insulated walls with wooden beam ends: Risks analysis for different insulation techniques



4. ACEITE DO TRABALHO ENVIADO AO CESB 2019

15/03/2019 Central Europe towards Sustainable Building 2019 Praha (CESB19) and iISBE Forum of Young Researchers in Sustainable Buildi...

Your Submissions

Here you can submit new contributions and manage your submitted contributions.

You have submitted one or more contributions, which you see listed here:

- 312** **Submission Type / Conference Track:** CESB19 Abstract
Format: Preference of oral presentation
The Influence of Architectural Parameters on the Thermal Comfort of Buildings with Natural Ventilation under Different Climatic Conditions through Computational Simulations [Show Abstract](#)
SAKIYAMA, Nayara Rodrigues Marques (1,2); HEJAZI, Seyedeh Bina Mohammad (1); FRICK, Jürgen (1); GARRECHT, Harald (1) [Contribution Details](#)
[Review Results](#)
Organization(s): 1: University of Stuttgart, Germany; 2: Universidade Federal dos Vales do Jequitinhonha e Mucuri - UFVJM, Brazil
- This abstract has been accepted.**
- 1312** **Submission Type / Conference Track:** CESB19 Full Paper
Format: Preference of oral presentation
Effect of Traditional Persian Materials and Parametric Design on the Thermal Performance of a generic building in Mediterranean Climate [Show Abstract](#)
SAKIYAMA, Nayara Rodrigues Marques (1,2); HEJAZI, Seyedeh Bina Mohammad (1); FRICK, Jürgen (1); GARRECHT, Harald (1); DE OLIVEIRA, Camila Cordeiro (2) [Contribution Details](#)
[Edit Contribution Details](#)
[Review Results](#)
[Final Upload](#)
Organization(s): 1: University of Stuttgart, Germany; 2: Universidade Federal dos Vales do Jequitinhonha e Mucuri - UFVJM, Brazil
- 1st file [CESB19 Utilising Traditional Persian Materials and Parametric Design to Optimise Indoor Comfort in M.docx](#)
(7th Nov 2018, 02:45:19pm CET)
- Submitted File(s) for Final Version:**
- 1st file [CESB19 Utilising Traditional Persian Materials and Parametric Design to Optimise Indoor Comfort in M.docx](#)
(15th Mar 2019, 09:18:06pm CET)

This contribution has been accepted with reservations.

Form of presentation (oral or poster) will be announced later.

Please follow the link "Review Results" on the right hand side to see the reviewers' comments and recommendations. You are expected to subject your paper to revision according to the reviewers' comments, so that it is involved in the conference programme.

You have limited time to improve your paper and upload the final version of your full paper by **"15 March"** at latest. Please do not forget to **fill in the authors' names and organizations** according to the template layout. Further, make sure that your paper format corresponds to the Conference template and length requirements (8 pages in total).

Please note that only by paying presenting author's registration fee by 1 April 2019 your paper will be published in the proceedings.

Deadline for Final Uploads: 15th Mar 2019, 11:59:59pm CET (Time left: 12 hours 11 minutes)



5. ACEITE DOS TRABALHOS ENVIADOS AO BS 2019



Nayara Rodrigues Marques Sakiyama
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Materials Testing Institute (MPA)
Pfaffenwaldring 2b
70569 Stuttgart
Germany

15/Mar/2019

To Whom It May Concern

This is to confirm that **Nayara Rodrigues Marques Sakiyama** is welcome to participate in **Building Simulation 2019**, to be held in Rome, Italy - September 2 - 4, 2019.

Please note that registration fees, travel, living and accommodation expenses will not be supported by the conference organizers. Registration and hotel information is found at www.buildingsimulation2019.org.

Nayara Rodrigues Marques Sakiyama is author/co-author of the following accepted contribution(s):

Humidity and Temperature Variation in Building Stones: Comparing Simulation Results and Impedance Measurements

Author(s): Rodrigues Marques Sakiyama, Nayara; Mohammad Hejazi, Seyedeh Bina; Frick, Jürgen; Lehmann, Frank; Garrecht, Harald

Presenting Author: Rodrigues Marques Sakiyama, Nayara

Status: This abstract has been accepted for a paper submission

Hygrothermal Simulations Comparative Study: Assessment of Different Materials Using WUFI and DELPHIN Software

Author(s): Hejazi, Bina; Rodrigues Marques Sakiyama, Nayara; Frick, Jürgen; Garrecht, Harald

Presenting Author: Hejazi, Bina; Rodrigues Marques Sakiyama, Nayara; Frick, Jürgen; Garrecht, Harald

Status: This abstract has been accepted for a paper submission

We look forward to seeing Nayara Rodrigues Marques Sakiyama.

With kind regards

Vincenzo Corrado, Andrea Gasparella
Conference Chairs
Building Simulation 2019



6. COMPROVANTES DE MATRÍCULA NA UNIVERSIDADE DE STUTTGART

Universität Stuttgart Studiensekretariat, 70550 Stuttgart		 Universität Stuttgart	
Ms. Nayara Rodrigues Marques Sakiyama		Zentrale Verwaltung Dezernat III Studiensekretariat	
Dahlienstr. 7 70771 Leinfelden-Echterdingen		Haus der Studierenden Pfaffenwaldring 5c 70569 Stuttgart	
		T 0711 685-83644 F 0711 685-82377	
Matriculation Certificate			
Ms.		Nayara Rodrigues Marques Sakiyama	
Student ID (Matrikelnummer):		3341180	
Date of birth:		10.03.1987	
Name of birth:		Nayara Rodrigues Marques	
is enrolled at the University of Stuttgart in summer semester 2018 and is not on academic leave.			
First enrollment at the University of Stuttgart:		01.04.2017	
Enrolled at:		30.09.2017	
Total semesters at the University of Stuttgart:		3	
Of which is academic leave:		0	
Enrolled in the current subject of study at the University of Stuttgart since: 30.09.2017			
Degree:		Doctorate	
Subject:		Dr.-Ing. - Fakultät 2	
Form of studies:		Doctoral studies	
Standard time to degree:		-	
Academic semester:		3	
Abkürzungen: HF: Hauptfach	K: Kombination NF: Nebenfach	Wiss. HF: Wissenschaftliches Hauptfach Wiss. BF: Wissenschaftliches Beifach	EP/HF: Erweiterungsprüfung Hauptfach EP/BF: Erweiterungsprüfung Beifach
Automatically generated confirmation. Valid without signature. Valid: Winter semester (WS): 01.10. to 31.03. Summer semester (SS): 01.04. to 30.09.			



Universität Stuttgart

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Ms.
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Dahlienstr. 7
70771 Leinfelden-Echterdingen

Matriculation Certificate

Ms. **Nayara Rodrigues Marques Sakiyama**

Student ID (Matrikelnummer): 3341180

Date of birth: 10.03.1987

Name of birth: Nayara Rodrigues Marques

is enrolled at the University of Stuttgart in **winter semester 2018/19** and is not on academic leave.

First enrollment at the University of Stuttgart: **01.04.2017**

Enrolled at: 30.09.2017

Total semesters at the University of Stuttgart: 4

Of which is academic leave: 0

Enrolled in the current subject of study at the University of Stuttgart since: 30.09.2017

Degree: Doctorate

Subject: Dr.-Ing. - Fakultät 2

Form of studies: Doctoral studies

Standard time to degree: -

Academic semester: 4

Abkürzungen:
HF: Hauptfach

K: Kombination
NF: Nebenfach

Wiss. HF: Wissenschaftliches Hauptfach
Wiss. BF: Wissenschaftliches Beifach

EP/HF: Erweiterungsprüfung Hauptfach
EP/BF: Erweiterungsprüfung Beifach

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Valid: Winter semester (WS): 01.10. to 31.03. Summer semester (SS): 01.04. to 30.09.