



**ROMAIN RUMPLER**

*From Sweden to France*



Project: **Reduced-order modelling of Finite Element problems**

Research topic: **Engineering**

Swedish Institution: **KTH Royal Institute of Technology**

French Institution: **Conservatoire national des arts et métiers CNAM Paris**

Dates of mobility: **26/01/2023 to 24/02/2023**

Program: **SFVE-A**



## PRESENTATION

[Romain Rumpler](#) is an Associate Professor in Engineering Acoustics at the Marcus Wallenberg Laboratory for Sound and Vibration ([MWL](#)) at the [Department of Engineering Mechanics](#) of [KTH](#). He is interested in numerical methods and modelling of coupled acoustics and vibration applications, among others Finite Element modelling of large scale problems, design optimization and acoustic materials or metamaterials. He is involved in the [Centre for Eco2 Vehicle Design](#), working to ameliorate transportation noise by a mixed experimental-numerical approach, noise impact assessment and feeding into dynamically-controlled traffic strategies. He obtained his joint PhD from Le Conservatoire National des Arts et Métiers ([CNAM](#)) and KTH in 2012.

## ACTIVITIES IN FRANCE

Romain Rumpler spent his mobility to France with the head of the Structural Mechanics and Coupled System Laboratory ([LMSSC](#)) at CNAM, [Prof. Jean-François Deü](#), who was his PhD supervisor and was invited as a guest professor to KTH. At the lab, a range of experiments on active control via the use of piezoelectric actuators are conducted, and the acoustics lab hosted inter alia investigations into a hemispheric active noise control setup in combination with machine learning techniques in order to recreate complex soundscapes. Future collaborations were envisaged especially in the areas of structural dynamics, machine learning for acoustic signals, numerical modelling of complex systems, and reduced-order modelling. He also held a seminar on reduced-order modelling of Finite Element (FE) problems, e.g., the use of parametric moment-matching techniques to calculate large FE problems with complex materials and Multiphysics coupled domains. This sparked discussions with among others [Asst. Prof. Christophe Hoareau](#), with whom a joint project was equally planned, [Dr. Lucie Rouleau](#), and [Asst. Prof. Boris Lossouarn](#), who were all invited to a research visit or to hold a seminar at KTH. A co-tutored PhD program between the two laboratories was established upon his return to Sweden.