



University of Naples Federico II

Department of Structures for Engineering and Architecture

via Claudio 21, 80125, Napoli, Italy

dr. Nicolò Vaiana, Assistant Professor

mobile: +39 329 187 6763, e-mail: nicolo.vaiana@unina.it

web page: <https://www.docenti.unina.it/nicolo.vaiana>

Proposed Seminar for Ph.D. Students (4 hours)

Title

Hysteretic Mechanical Systems: Phenomenological Modeling and Numerical Continuation

Abstract

The 4-hour seminar aims at: a) illustrating the typical complex experimental behavior exhibited by hysteretic mechanical systems generally adopted in aerospace, civil, mechanical, naval, and structural engineering; b) presenting a unified phenomenological modeling approach based on the use of the recently formulated Vaiana-Rosati Model of hysteresis; c) illustrating a continuation method, based on Poincaré maps, that allows for an accurate study of frequency response, stability and bifurcation of hysteretic mechanical systems.

Seminar Program

	Hours	Date	Instructor
Part 1 - Phenomenological Modeling			
1.1 Complex Hysteresis Phenomena	1	04/2025	Vaiana
1.2 Vaiana-Rosati Model of Hysteresis	1	04/2025	Vaiana
Part 2 - Numerical Continuation			
2.1 Continuation Method Based on Poincaré Maps	1	04/2025	Capuano
2.2 Frequency Response, Stability and Bifurcation	1	04/2025	Capuano

Instructors

N. Vaiana - Tenure Track Assistant Professor of Structural Mechanics

R. Capuano - Research Fellow of Structural Mechanics

Notes:

the seminar will be also held online to allow for the participation of international Ph.D. students.