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Short Professional details and affiliation:

Paulo Batista Gonçalves is an **Emeritus Professor** at the **Pontifical Catholic University of Rio de Janeiro, PUC-Rio** with **45 years** of experience in **Structural Stability and Dynamics**. Specializing in **Nonlinear Dynamics**, **Paulo B. Gonçalves** has successfully published **More than 500 articles** published in the areas of structural instability and nonlinear dynamics. Organizer and editor of several national and international conferences. Editorial board of **Nonlinear Dynamics**, **Meccanica**, **Proceedings of the Institution of Mechanical Engineers, Part C** and **REM International Engineering Journal**. **Paulo B. Goncalves** holds a **D.Sc.** from **Federal University of Rio de Janeiro** and post-doctorate from **University College London** and is passionate about **the interplay between stability and global dynamics**.

Plenary lecture

Global Nonlinear Dynamics in the Analysis and Safety of Multistable Dynamical Systems

Abstract: In recent years, an increasing number of investigations have been published on the advantageous use of buckling in science and diverse engineering fields. These applications include actuators, energy harvesters, micromechanical systems (MEMS), robotics, energy absorbers, and metamaterials, among others. Researchers have proposed various structural systems, materials, and fabrication procedures. Special attention has been given to bistable and multistable structures—those with two or more stable configurations at the same load level, particularly those exhibiting snap-through buckling. Many of these systems consist of chains of bistable elements, flexibly or rigidly connected, which respond to applied loads or displacements in a progressive manner. However, their nonlinear dynamic behavior and stability remain poorly understood. To analyze these systems and ensure their safety, global dynamic analysis tools are essential. These tools enable investigation of the interplay between coexisting solutions. This presentation focuses on the nonlinear global dynamics of such systems and the appropriate design tools.