

# First Joint Meeting Brazil Italy of Mathematics Special Session: Control and Asymptotics of Nonlinear PDE Dynamics

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**Title:** Wave equations with moving boundary

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**Abstract:** This talk is concerned with long-time dynamics of weakly damped semilinear wave equations defined on domains with moving boundary. Since the boundary is a function of the time variable the problem is intrinsically non-autonomous. Under the hypothesis that the exterior normal to the lateral boundary does not belong to the corresponding light cone, the solution operator of the problem generates an evolution process defined on time-dependent Sobolev spaces. Then, by assuming the domain is expanding, we establish the existence of a minimal pullback attractor with respect to a universe of tempered sets defined by the forcing terms. This is done by presenting an appropriate criterion for asymptotic compactness.

## References

- [1] C. Bardos and G. Chen, Control and stabilization for the wave equation. III. Domain with moving boundary, *SIAM J. Control Optim.* **19** (1981), 123-138.
- [2] P. E. Kloeden, J. Real and C. Sun, Pullback attractors for a semilinear heat equation on time-varying domains, *J. Differential Equations* **246** (2009), 4702-4730.
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