Linear Response: Formulae and Rigorous Approximations

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In the first part of the talk we present a general functional analytic setting in which the formula describing the linear response of the physical measure of a perturbed system can be obtained. In this setting, which is suitable for uniformly expanding maps, we obtain an algorithm that can be implemented on the computer to rigorously approximate the linear response up to any pre-specified error in a suitable topology. In the second part of the talk we present a general setting, which is mainly suitable for 1-d non-uniformly expanding maps, in which the linear response formula can be obtained. We discuss the relation between the formula of the non-uniformly expanding system with the formula of its (uniformly expanding) induced counterpart.

The first part of this work is joint with S. Galatolo, I. Nisoli and X. Niu. The second part is joint with B. Saussol.