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Trace and Observability Inequalities for Laplace Eigenfunctions on the Torus

Short abstract of the Course:

We investigate trace and observability inequalities for eigenfunctions of the Laplace operator, with respect to arbitrary Borel measures. Namely,
We characterize the measures μ for which. Specifically, we characterize the measures for which the inequalities
$$ \int |u|^2 d\mu \leq C \int |u|^2 dx $$
(Trace inequality)
Or
$$ \int |u|^2 dx \leq C \int |u|^2 d\mu $$
(Observation inequality)
Hold (here u is an eigenfunction of the Laplace operator)
This is joint work with P. Germain (Universitaet Wien), Massimo Sorella (Imperial College London) and Hui Zhu (RIMS Kyoto)