GLOBAL PROPAGATION OF ANALYTICITY AND UNIQUE CONTINUATION FOR SEMILINEAR WAVES

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In this talk, we explore the global propagation of analyticity and unique continuation for solutions of the semilinear wave equation, where the nonlinearity is assumed to be subcritical, defocusing, and analytic. We will first discuss how an analytic in time regularization can be obtained in a finite-time setting for solutions who are observed to be zero in a small subset of the domain. Central to our approach is the assumption that the observation zone satisfies the geometric control condition (GCC). This will allow us to employ tools coming from the context of control theory to achieve the result. As a consequence, we are able to obtain propagation of analyticity and a unique continuation property, both in finite time under the GCC. Finally, we will stress that the analytic regularization property in finite-time was actually obtained in an abstract framework, allowing to explore similar results for other PDEs. These results are part of a joint work with C. Laurent (LJLL).