Barcelona Analysis Seminar **2023–2024**

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Room: UB T2 (Universitat de Barcelona)

Indentifying electric potentials via the local near-field scattering pattern at fixed energy

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We study the inverse scattering problem with electric potentials. We prove that local measurements of electromagnetic waves at fixed energies can uniquely determine a *rough*, compactly supported potential in dimension $n \geq 3$.

By *rough*, we mean that the potential can be decomposed into a part that lives in $L^{n/2}$, a part that is supported in a compact hypersurface, and a part that corresponds to the s^{th} derivative of an L^∞ function, with $1/2 < s < 1$.

The solution of this forward problem is already quite interesting in and of itself, but we will center the talk in the solution of the inverse problem. Caro and Garcia proved in 2020 that measuring waves at a fixed energy on a sphere surrounding the potential would give its unique determination. To extend these results to smaller set of measurements, in this case to a small hypersurface in the vicinity of the potential, we use unique continuation and interior regularity arguments.