The Calderón problem with corrupted data

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The inverse Calderón problem consists in determining the conductivity inside a medium by electrical measurements on its surface. Ideally, these measurements determine the Dirichlet-to-Neumann map and, therefore, one usually assumes the data to be given by such map. This situation corresponds to having access to infinite-precision measurements, which is unrealistic. In this talk, I will consider the Calderón problem assuming data to contain measurement errors and provide formulas to reconstruct the conductivity and its normal derivative on the surface (joint work with Andoni García). I will also present similar results for Maxwell's equations (joint work with Ru-Yu Lai, Yi-Hsuan Lin, Ting Zhou). When modelling errors in these two different frameworks, one realizes the existence of certain freedom that yields different reconstruction formulas. To understand the whole picture of what is going on, we will rewrite the problem in a different setting, which will bring us to analyse the observational limit of wave packets with noisy measurements (joint work with Cristóbal J. Meroño).