

**On Inverse Shape Problems, Regular Cloaking and Geometric Structures of
Transmission Eigenfunctions**

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Hongyu Liu

Hong Kong Baptist University

In this talk, the speaker shall discuss his recent research progress on three different but interestingly connected topics in wave scattering. They are the geometrical inverse problem of recovering the shape of a scatterer, independent of the content, by a minimal number of scattering measurements; the invisibility cloaking by regular mediums; and the geometric structures of transmission eigenfunction.