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**Zachary J Bailey\*** (zbailey0130@gmail.com), Temple University, 1805 N Broad St, Wachman Hall 522, Philadelphia, PA 19122. *Some Inverse Problems For Hyperbolic Partial Differential Equations.*

We consider four inverse problems for hyperbolic PDEs with two of them associated with one space dimension and two of them associated with three space dimensions.

The first two problems are inverse problems associated to one space dimensional hyperbolic systems of PDEs with complex coefficients where the goal is the recovery of a single complex coefficient from either the reflection data or the transmission data. We show that the map sending the coefficient to the reflection/transmission data is injective and stable and we also characterize the range of this map for the transmission data case.

The other two problems are associated with a single hyperbolic PDE with a zero order coefficient and the goal is the recovery of this coefficient from two different types of “backscattering data” - backscattering data coming from a fixed offset distribution of sources and receivers on the boundary or backscattering data coming from a single incoming spherical wave. For these problems we prove a stability result provided the difference of the two coefficients is horizontally or angularly controlled respectively.

Our work adapts the techniques used by Eemeli Blåsten, Rakesh and Gunther Uhlmann to solve problems similar to theirs. (Received September 17, 2018)