

RECENT RESULTS ON DAMEK-RICCI SPACES

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A celebrated result of C. Fefferman and E.M. Stein states that the Hardy space $H^1(\mathbb{R}^n)$ may be characterised in a number of ways, in particular, via Riesz transforms, the heat maximal operator and the Poisson maximal operator. It is natural to ask whether the same holds in a more general setting.

In this talk, we shall concentrate on Damek-Ricci spaces, introduced by Ewa Damek and Fulvio Ricci in the 90's. We shall define Hardy spaces in terms of the Riesz transform, the heat maximal operator and the Poisson maximal operator. Quite surprisingly we show that these three spaces are mutually distinct. Relations with other Hardy-type spaces introduced by Mauceri, Meda and Vallarino will be discussed. Extensions to more general Riemannian manifolds will also be examined.

This is joint work with Alessio Martini and Maria Vallarino.