



MAFIA - the seminar you can't refuse

An optimal fractional Hardy inequality on the discrete half-line

Ujjal Das

Basque Center for Applied Mathematics

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12:00–13:00

in T212

Fakulta jaderná a fyzikálně inženýrská ČVUT, Trojanova 13, 12000 Praha

Abstract: Over the past century, Hardy-type inequalities have been a widely studied research topic due to their connection with PDEs, spectral theory, and probability. In this talk, we will discuss the discrete fractional Hardy inequality on the discrete half-line \mathbb{N} with optimal weight function. We will construct an optimal Hardy-weight W_σ^{op} of the fractional Laplacian $(-\Delta_{\mathbb{N}})^\sigma$ on \mathbb{N} for exponents $\sigma \in (0, 1]$. As a consequence, we obtain an estimate of the sharp constant in the fractional Hardy inequality with the classical Hardy-weight $n^{-2\sigma}$ on \mathbb{N} . Certain unique continuation results will also be derived as an application. This talk is based on a joint work with Rubén de la Fuente-Fernández.

References

[1] U. Das, R. Fuente-Fernández. An optimal fractional Hardy inequality on the discrete half-line. *Calc. Var.* 65, 46 (2026). Arxiv:2507.06716, 2025.