

FRACTAL UNCERTAINTY PRINCIPLE AND APPLICATIONS

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Fractal uncertainty principle (FUP) states that no function can live near a fractal set in both position space and Fourier space. I will explain one version of FUP and describe two applications to spectral and scattering theory on hyperbolic surfaces. For compact hyperbolic surfaces, FUP implies that every semiclassical limiting measure of a high frequency sequence of eigenfunctions is supported everywhere on the cosphere bundle. For convex co-compact hyperbolic surfaces, FUP gives an essential spectral gap. This talk is based on joint works with Jean Bourgain, Long Jin, and Joshua Zahl