Spectrality of Product Domains

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A set Ω in R^d is called spectral if the space L^2(Ω) admits an orthogonal basis consisting of exponential functions. Which sets Ω are spectral? This question is known as ""Fuglede's spectral set problem"".

In the talk we will be focusing on the case of product domains, namely, when Ω = AxB. In this case, it is conjectured that Ω is spectral if and only if the factors A and B are both spectral. We will discuss some new results, joint with Nir Lev, supporting this conjecture, and their applications to the study of spectrality of convex polytopes.