The local geometry of idempotent Schur multipliers
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What happens to an L_p function when one truncates its Fourier transform to a domain? This is in the root of foundational problems in harmonic analysis. Fefferman's celebrated theorem for the ball (1971) imposes that, to preserve L_p-integrability, the boundary of such domain must be flat. What if we truncate on a curved space like a Lie group? What do we mean by "boundary flatness" in that case? And if we truncate the entries of a given matrix? What happens with the singular numbers of it or with its Schatten p-norm? We will fully characterize the local geometry of such L_p-preserving truncations for these apparently unrelated problems. Based on joint work with M. de la Salle and E. Tablate.