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Mr. PAPPAS, Nikolaos (University of Ioannina): Emission of Massive Scalar Fields by a Higher-Dimensional Rotating Black-Hole

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We perform a comprehensive study of the emission of massive scalar fields by a higherdimensional, simply rotating black hole both in the bulk and on the brane. We derive approximate, analytic results as well as exact numerical ones for the absorption probability, and demonstrate that the two sets agree very well in the low and intermediate-energy regime for scalar fields with mass $m = 1$ TeV in the bulk and $m = 0.5$ TeV on the brane. The numerical values of the absorption probability are then used to derive the Hawking radiation power emission spectra in terms of the number of extra dimensions, angular-momentum of the black hole and mass of the emitted field. We compute the total emissivities in the bulk and on the brane, and demonstrate that, although the brane channel remains the dominant one, the bulk-over-brane energy ratio is considerably increased (up to 33%) when the mass of the emitted field is taken into account.

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