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Black Hole Greybody Factors and Monodromies

Black hole thermal radiation has captivated part of the theoretical physics community since its discovery by Hawking. In light of holography, deep connections have emerged between details of the black hole and a holographically dual field theory. Recent observations demonstrate that for a large class of black holes — as well as five-dimensional black rings and black strings — the product of inner and outer horizon areas is independent of mass; a simple connection with left- and right-moving temperatures of a dual field theory is proposed here. This directly connects to the observation that inner horizons play crucial roles in computing reflection and transmission coefficients, despite the fact that the scattering problem is set up without regard to behavior at the inner horizon. Drawing on ongoing work, we will suggest a new interpretation for how to understand the role of inner horizons in scattering problems; as a byproduct, this may lead to a different way of computing greybody factors from the classic method of matched asymptotic expansions.