

Exact results for probes of Conformal Field Theories

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We consider a heavy probe coupled to a general four-dimensional conformal field theory, and argue that a variety of interesting quantities are determined in terms of a single function, the Bremsstrahlung function, that depends on the probe and on the theory. For the particular case of a heavy probe coupled to N=4 super Yang Mills, we use localization techniques to determine the corresponding Bremsstrahlung function exactly for various gauge groups and representations. We present a number of applications, from computations of exact transport coefficients to a novel prediction for string perturbation theory.

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