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Paul Loya* (paul@math.binghamton.edu), Dept. of Mathematics, Binghamton University, Vestal Parkway East, Binghamton, NY 13902, and **Klaus Kirsten** and **Jinsung Park**. *Exotic expansions and pathological properties of ζ -functions on conic manifolds.*

This is joint work with Jinsung Park and Klaus Kirsten. In my talk, I will discuss new exotic phenomena of ζ -functions associated to general self-adjoint extensions of Laplace-type operators over compact conic manifolds. It turns out that the meromorphic extensions of these ζ -functions have, in general, countably many logarithmic branch cuts on the nonpositive real axis and unusual locations of poles with arbitrarily large multiplicity. I will also present an explicit algebraic recipe to find the leading order coefficients of the singularities and present simple examples. The corresponding heat kernel and resolvent trace expansions also exhibit exotic behaviors with logarithmic terms of arbitrary positive and negative multiplicity. (Received August 17, 2005)