1093-35-34   **Paul M. N. Feehan*** (`feehan@rci.rutgers.edu`), Department of Mathematics, Rutgers, The State University of New Jersey, 110 Frelinghuysen Road, Piscataway, NJ 08854. *A classical Perron method for existence of smooth solutions to boundary value and obstacle problems for degenerate-elliptic operators via holomorphic maps.*

We prove existence and uniqueness of solutions to boundary value problems and obstacle problems for degenerate elliptic and parabolic, linear, second-order partial differential operators with partial Dirichlet boundary conditions using new a version of the Perron method. These existence and uniqueness results have applications to questions regarding the existence and uniqueness of solutions to European and American-style option pricing problems for an asset price process modeled by a degenerate diffusion (such as the Heston process). (Received June 28, 2013)