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Rod Freed* (raf12@cox.net), 25832 Empresa, Mission Viejo, CA 92691. *Approximate Solutions to Some Inverse Problems.*

Many PDEs and the associated integral equations (see e.g., Kirsch [1996]) lack closed form solutions. In this paper, we take advantage of the isomorphism between a class of PDEs and the class of diffusion processes (see Dynkin [2000] or Bass [1998]) to show that nonparametric kernel regression can be used to provide approximations to the functions which solve the above mentioned PDEs and integral equations. We show that these approximations converge in measure to the actual solutions. (Received February 22, 2005)