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E. N. Barron and **R R Jensen*** (rjensen@luc.edu). *Envelope solutions of 1st and 2nd order pdes with u dependence.*

General envelope methods are introduced which may be used to embed equations with u dependence into equations without solution dependence. Furthermore these methods present a rigorous way to consider so-called nodal solutions. That is, if $w(t, x, z)$ is the viscosity solution of some pde, the nodal solution of an associated pde is a function $u(t, x)$ so that $w(t, x, u(t, x)) = 0$. Examples will be given to first and second order pdes such as those arising in optimal control, differential games, minimal time problems, scalar conservation laws, geometric type equations, and forward-backward stochastic control (Received January 30, 2017)