Branching methods for PDEs

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Branching methods have recently been developed to solve some PDEs. Starting from Mckean formulation, we give the initial branching method to solve the KPP equation. We then give a formulation to solve non linear equation with a non linearity polynomial in the value function u. The methodology is extended for general non linearities in the value function u. Then we develop the methodology to solve non linear equation with non linearities polynomial in u and Du with convergence results. At last we give some numerical schemes to solve the semi-linear case and even the full non linear case but currently without convergence results.