Hamilton Jacobi equation and divergent series summations

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The Hamilton Jacobi equation for resonant motions in quasi integrable Hamiltonian systems (ie analytic integrable systems with an analytic perturbation proportional to a small parameter ε) admits a formal power series solution. It is a conjecture that the series is not convergent: I shall present a resummation method which leads to a convergent series solution of the equation for values of the perturbation parameter for which a solution to the equation can be expected to exist and which form a set with 0 as a density point but with open dense complement. The issue of possible lack of uniqueness is stressed and briefly discussed.