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We present a constructive method to control the bilinear Schro edinger equation via two controls. The method is based on adiabatic techniques and works if the spectrum of the Hamiltonian admits eigenvalue intersections, and if the latter are conical (as it happens generically). In this framework, we are able to spread on several levels connected by conical intersections a state initially concentrated in a single energy level. We provide sharp estimates on the dependence of the error with respect to the controllability time. Moreover, we identify some special curves in the space of controls that improve the precision of the adiabatic approximation, when passing through conical intersections, with respect to classical adiabatic theory. (Received September 20, 2011)