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   Sommario/riassunto The notion of an invariant manifold arises naturally in the asymptotic
                      stability analysis of stationary or standing wave solutions of unstable
                      dispersive Hamiltonian evolution equations such as the focusing
                      semilinear Klein-Gordon and Schrodinger equations. This is due to the
                      fact that the linearized operators about such special solutions typically
                      exhibit negative eigenvalues (a single one for the ground state), which
                      lead to exponential instability of the linearized flow and allows for
                      ideas from hyperbolic dynamics to enter. One of the main results
                      proved here for energy subcritical equations is that the center-stable
                      manifold associated with the ground state appears as a hyper-surface
                      which separates a region of finite-time blowup in forward time from
                      one which exhibits global existence and scattering to zero in forward
                      time. Our entire analysis takes place in the energy topology, and the
                      conserved energy can exceed the ground state energy only by a small
                      amount. This monograph is based on recent research by the authors
                      and the proofs rely on an interplay between the variational structure of
                      the ground states on the one hand, and the nonlinear hyperbolic
                      dynamics near these states on the other hand. A key element in the
                      proof is a virial-type argument excluding almost homoclinic orbits
                      originating near the ground states, and returning to them, possibly
                      after a long excursion.   These lectures are suitable for graduate

students and researchers in partial differential equations and mathematical physics. For the cubic Klein-Gordon equation in three dimensions all details are provided, including the derivation of Strichartz estimates for the free equation and the concentration-compactness argument leading to scattering due to Kenig and Merle.