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Sommario/riassunto	This book presents a study of the saturation of unstable f-modes (fundamental modes) due to low-order nonlinear mode coupling. Since their theoretical prediction in 1934, neutron stars have remained among the most challenging objects in the Universe. Gravitational waves emitted by unstable neutron star oscillations can be used to obtain information about their inner structure, that is, the equation of state of dense nuclear matter. After its initial growth phase, the instability is expected to saturate due to nonlinear effects. The saturation amplitude of the unstable mode determines the detectability of the generated gravitational-wave signal, but also affects the evolution of the neutron star. The study shows that the unstable (parent) mode resonantly couples to pairs of stable (daughter) modes, which drain the parent’s energy and make it saturate via a mechanism called parametric resonance instability. Further, it calculates the saturation amplitude of the most unstable f-mode multipoles throughout their so-called instability windows.