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Beyond the modulational approximation in the wave triplet interaction, Paulo Iorra, Samuel Marini, Eduardo Alcides Peter, Renato Pakter, Felipe Barbedo Rizzato, *Universidade Federal do Rio Grande do Sul* ■One of the most well accepted and well established models for nonlinear wave interaction is based on the wave triplet concept . The wave triplet arises as an entity of physical significance, as one selects the three most prominent modes of an oscillatory system and investigates the coupled dynamics of these selected modes as an isolated subsystem. In general, one mode starts off with a sizeable energetic content, which is then periodically exchanged with the other two modes in a resonant fashion. Resonant conditions, thus a key ingredient for an active interaction of the modes, are defined as the matching conditions for the high-frequencies of the slowly modulated carriers involved in the interaction. The decay of mode *"1"* into the other two (*"2"* and *"3"*), for instance, is favored when the resonant condition $\omega_1 = \omega_2 + \omega_3$ among the three high-frequencies is observed. One promptly sees that, in its canonical form, resonant conditions are heavily based on a clear separation of the time scales referring to the high-frequency and the slow modulational dynamics. The present work investigates the breakdown of the traditional modulational approximation in the three wave nonlinear interaction, the wave triplet interaction. A common way to describe the interaction of three high-frequency carriers is to assume that amplitudes and phases are slowly modulated. This is the basis of the modulational approach, which is accurate when the three wave coupling is weak. We examine the types of dynamics arising when the coupling rises from very small to large values. At large values we detect an abrupt transition where the limited amplitude excursions of the modulational regime reach much larger regions of the appropriate configuration space. Extensions to similar cases are also investigated.