

GTP Seminar

CLUSTER OF INTERACTING WAVE TRIADS IN QG MODEL: QUADRATIC INVARIANTS

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We consider clusters of interconnected resonant triads arising from the QG model. A cluster consists of N modes forming a total of M connected triads. We investigate the problem of constructing a linearly independent set of quadratic constants of motion. We show that this problem is equivalent to an underlying basic linear problem, consisting of finding the null space of a rectangular $M \times N$ matrix A with entries 1, -1 and 0. In particular, we prove that the number of independent quadratic invariants is equal to $J \equiv N - M^* \geq N - M$, where M^* is the number of linearly independent rows in A . We formulate an algorithm for decomposing large clusters of complicated topology into smaller ones and show how various invariants are related to certain parts and linking types of a cluster, including the basic structures leading to $M^* < M$.

Thursday, May 16, 2013
Foothills Laboratory 2, Small Auditorium
Lecture at 10:30 am

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