

**Speaker:** Ricardo Grande

**Title:** Probabilistic study of the formation of extreme waves

**Abstract:** In this talk, we will study the formation of waves of large amplitude in deep sea from a statistical viewpoint. First, we will derive a large deviation principle for the probability of a large wave occurring (as the amplitude of the wave tends to infinity). Then we will study a related problem: if a large wave does occur, what is the most likely initial datum that produced it? We answer this question in the weakly nonlinear regime by giving a probabilistic characterization of the set of extreme waves in the case of the cubic NLS equation. Finally, we discuss applications of our approach to other equations, such as the Water Waves system.