Abstract Submitted for the MAR16 Meeting of The American Physical Society

The breakdown of breathers in the Fermi-Pasta-Ulam-Tsingou system<sup>1</sup> ALEXANDRA WESTLEY, RAHUL KASHYAP, SURAJIT SEN, State Univ of NY - Buffalo — It is well known that in many nonlinear lattices, remarkably stable and localized disturbances known as breathers may form. Here we discuss in short the properties of these objects in the context of the Fermi-Pasta-Ulam-Tsingou (FPUT) system which consists of a mass-spring chain, with spring potentials containing both quadratic and quartic terms. These breathers, though long-lasting, inevitably decay and eventually break apart with sudden violence. This talk in particular will focus on recent numerical work studying the lead-up to the breakdown in which the breather emits at (seemingly) random intervals solitary and anti-solitary waves in the highly nonlinear limit. Furthermore, a possible method to predict the times at which these waves are emitted by examing the frequency structure of the breather will be discussed.

<sup>1</sup>Partially supported by US Army Research Office

Surajit Sen State Univ of NY - Buffalo

Date submitted: 06 Nov 2015

Electronic form version 1.4