1126-70-203 **J. Douglas Wright*** (jdoug@math.drexel.edu), 3141 Chestnut St, Philadelphia, PA 19104, and **Aaron Hoffman**. *Traveling Waves in Diatomic Fermi-Pasta-Ulam-Tsingou lattices.*

Consider an infinite chain of masses, each connected to its nearest neighbors by a (nonlinear) spring. This is an FPUT lattice. In the instance where the masses are identical, there is a well-developed theory on the existence, dynamics and stability of solitary waves and the system has come to be one of the paradigmatic examples of a dispersive nonlinear equation. In this talk, I will discuss recent rigorous results of mine (together with T. Faver, A. Hoffman, R. Perline, A. Vainchstein and Y. Starosvetsky) on the existence of traveling waves in the setting where the masses alternate in size. In particular I will address in the limit where the mass ratio tends to zero. The problem is inherently singular and as such the existence theory becomes rather complicated. In particular, we find that the traveling waves are not true solitary waves but rather "nanopterons", which is to say, waves which asymptotic at spatial infinity to very small amplitude periodic waves. Moreover, we can only find solutions when the mass ratio lies in a certain open set. The difficulties in the problem all revolve around understanding Jost solutions of a nonlocal Schrodinger operator in its semi-classical limit. (Received January 13, 2017)