1116-92-726 **Sebastian J. Schreiber***, University of California, Davis, and **Mathieu Faure**, Aix-Marseille School of Economics. *Establishment of sexual invaders: Insights from frequency-dependent branching processes.*

A biological invasion corresponds to a species establishing itself in a new environment. While most invasion attempts fail, the successful ones (e.g. zebra mussel, chestnut blight) can dramatically impact their new environment. As invasions initially consist of a small number of individuals, success or failure is a highly stochastic process. For asexual populations, branching processes provide a useful approximation for the invasion dynamics and (generically) exhibit a fundamental dichotomy: extinction in finite time or unbounded growth which (i.e. successful establishment). Unbounded growth only occurs with positive probability if individuals on average replace themselves. In contrast, for sexual populations, individuals must mate to reproduce and, consequently, exhibit frequency-dependent interactions. I will describe a general class of Markov processes that account for these frequency-dependent interactions. Using the method of "mean limit ODEs", I will present results that determine whether unbounded growth occurs with positive probability or not, and characterize the asymptotic dynamics on the event of unbounded growth. These results lead to a new type of bifurcation diagrams which highlight under which conditions successful invasions are less or more likely. (Received September 11, 2015)