1139-14-501   **Izzet Coskun**, Dept. of MSCS, Univ. of Illinois at Chicago, 322 Science and Engineering Offices (M/C 249), 851 S. Morgan St., Chicago, IL 60607-7045, **Howard Jacob Nuer*** (`hnuer@uic.edu`), Dept. of MSCS, Univ. of Illinois at Chicago, 322 Science and Engineering Offices (M/C 249), 851 S. Morgan St., Chicago, IL 60607-7045, and **Kota Yoshioka**.
Brill-Noether theory and global generation for sheaves on K3 surfaces.

In the study of moduli spaces of sheaves, two natural questions arise: 1) does the generic sheaf in a moduli space have the expected cohomology (i.e. at most one nonzero cohomology group)? and 2) in the case of positive Euler characteristic, is the generic sheaf in the moduli space globally generated? When the first question has a positive answer, we say the given moduli space satisfies the "Weak Brill-Noether theorem." Using the theory of Bridgeland stability conditions and Bayer-Macrì's classification of walls on K3 surfaces, we discuss the progress of an ongoing project aimed at answering these two questions for stables sheaves on K3 surfaces of Picard rank 1. To illustrate our methods, we will discuss in detail how to cleanly and quickly obtain a complete classification in ranks 1 and 2 of those moduli spaces of stable sheaves which satisfy weak Brill-Noether and global generation, respectively. This is joint work with Izzet Coskun and Kota Yoshioka. (Received February 19, 2018)