## BRILL-NOETHER THEORY OF CURVES ON ABELIAN SURFACES AND APPLICATIONS

Brill-Noether theory of curves on K3 surfaces is well understood. Quite little is known for curves lying on abelian surfaces. Given a general abelian surface S with polarization L of type (1, n), we will first show that a general curve in |L| is Brill-Noether general. We will then study the locus  $|L|_d^r$  of smooth curves in |L| possessing a  $g_d^r$  and prove that this is nonempty in some unexpected cases (with negative Brill-Noether number). As an application, we obtain the existence of a component of the Brill-Noether locus  $M_{g,d}^r$  having the expected codimension in the moduli space of curves  $M_g$ . Time permitting, we will mention hyperkähler manifolds and some open problems. This work is joint with A. L. Knutsen and G. Mongardi.