Brill-Noether Theory of stable bundles on ruled surfaces

I. Macías Tarrío

Irene Macías Tarrío (irene.macias@ub.edu)
Universitat de Barcelona

Abstract.

Let X be a smooth projective surface over an algebraically closed field K of characteristic 0 and H an ample divisor on X. Consider $M_H := MX, H(r; c_1, c_2)$ the moduli space of H-stable rank-r vector bundles on X with fixed Chern classes $c_i := c_i(E) \in H^{2i}(X, \mathbb{Z})$ for $i = 1, 2$.

One way to study the geometry of the moduli space M_H is by considering its subvarieties. In particular, one can consider the subvarieties called Brill-Noether loci, whose points are stable vector bundles having at least k independent global sections. In this talk, we will focus the attention on study the non-emptiness and the geometry of the Brill-Noether locus in the case when X is a ruled surface.

References

[1] L. Costa and I. Macías Tarrío, *Brill–Noether Theory of Stable Vector Bundles on Ruled Surfaces*, Mediterr. J. Math. 21 (2024), Art. 118.

[2] L. Costa and R. M. Miró-Roig, *Brill-Noether Theory for moduli spaces of sheaves on algebraic varieties*, Forum Math. 22.3 (2010), pp. 411–432.

[3] D. Huybrechts and M. Lehn, *The geometry of moduli spaces of sheaves*, 2nd. Cambridge: Cambridge University Press, 2010.