

The classical Bogomolov inequality imposes restrictions on the second Chern characters of semistable sheaves on smooth projective varieties. Once the dimension of the variety is at least three, it is natural to wonder about other Chern characters. Work over the last decade has moved this question into the realm of derived categories, where Bayer, Macri, and Toda conjectured an inequality for threefolds. Their conjecture fails in general, but still provides a guiding principle in the area. I will give an introduction to the question, and hint towards applications to very concrete geometric questions.