1171-13-15 **Michael K. Brown** and **Daniel Erman*** (derman@math.wisc.edu). *Multigradings in algebra and geometry.*

Algebraic objects with a graded structure are easier to study than those without such a structure, as the grading allows for the use of powerful tools. This is a classical story, and includes the algebra/geometry connection at the heart of projective algebraic geometry. By analogy, algebraic objects with a multigraded structure should allow for the use of even more powerful tools, and recent years have seen a number of efforts in this direction. I will discuss how multigraded objects arise throughout algebra, geometry, and combinatorics, and I will give an overview of new tools for studying such objects, especially including connections with toric geometry. This is join work with Michael K. Brown. (Received July 28, 2021)