1167-14-82   **Devlin Mallory***, malloryd@umich.edu. *Differential operators on singular rings and the global geometry of projective varieties.*

Differential operators on singular rings have been studied for several decades, but their explicit description is difficult and basic properties remain mysterious. When the ring in question is the homogeneous coordinate ring of a smooth projective variety, however, we can study certain properties of the ring of differential operators via the global geometry of the variety. In particular, this allows us to demonstrate that rings with "mild" singularities need not have "nice" differential operators in characteristic 0 (in contrast to the situation in positive characteristic). This talk will discuss these results, and more importantly the many questions, both algebraic and geometric, that remain open. (Received February 16, 2021)