1145-13-463 **Nicholas Switala*** (nswitala@uic.edu) and **Wenliang Zhang**. *On completion of graded $D$-modules.*

Let $k$ be a field of characteristic zero, $R$ a polynomial ring in finitely many variables with coefficients in $k$, and $\widehat{R}$ the formal power series ring in the same variables. If $M$ is a left $D(R,k)$-module, then $\widehat{R}\otimes_R M$ is naturally a left $D(\widehat{R},k)$-module. Hartshorne and Polini gave an example showing that the de Rham cohomology of $M$ and $\widehat{R}\otimes_R M$ need not be the same, even when $M$ is holonomic. They asked whether the de Rham cohomology is the same in the case where $M$ is not just holonomic but *graded*, that is, $M$ is a graded $R$-module and the partial derivatives in $D(R,k)$ act as operators of degree $-1$. We prove that the answer is yes. In fact, we need only assume that $M$ is graded and has finite-dimensional de Rham cohomology. (Received September 06, 2018)