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Josep Àlvarez Montaner, Daniel Hernández, Jack Jeffries, Luis Núñez-Betancourt, Pedro Teixeira and Emily Witt* (witt@ku.edu). *Functional equations and V-filtrations for non-regular rings.*

We construct D-modules in which to understand a formal functional equation for the Bernstein-Sato polynomial of a direct summand of a polynomial over a field. Interestingly, the Bernstein-Sato polynomial in this setting can have zero as a root, or even positive roots. We also introduce V -filtrations for a family of rings that includes toric, determinantal, and other invariant rings. This new theory is applied to the study of multiplier ideals and Hodge ideals of singular varieties. (Received August 16, 2021)