Local cohomology over the integers

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We will discuss some recent results on local cohomology modules of rings of polynomials with integer coefficients, obtained by viewing these as modules over rings of differential operators. We will explain how this point of view yields proofs of some polynomial identities constructed previously by ad hoc methods. This is based on joint work with Bhatt, Blickle, Lyubeznik, and Zhang, and with Lyubeznik and Walther.