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Anna Puskas*, puskas@ualberta.ca. *Demazure-Lusztig operators, metaplectic Iwahori-Whittaker functions and crystals.*

Demazure-Lusztig operators appear throughout the study of p -adic Whittaker functions, in both the nonmetaplectic and the metaplectic setting. Brubaker, Bump and Licata used them to describe Iwahori-Whittaker functions in the finite-dimensional setting; Manish Patnaik to prove an analogue of the Casselman-Shalika formula for affine Kac-Moody groups. Joint work with Gautam Chinta and Paul E. Gunnells shows that their metaplectic versions behave similarly to the nonmetaplectic ones - in particular, the existence of a metaplectic analogue of the Demazure character formula. We will review a metaplectic version of Tokuyama's theorem that uses Demazure-Lusztig operators as a combinatorial tool. This result links the constructions of Whittaker functions as a sum over a highest weight crystal (Brubaker-Bump-Friedberg and McNamara), and as a sum over a Weyl group (Chinta-Offen and McNamara). Then we will discuss joint work with Manish Patnaik that relates metaplectic Iwahori-Whittaker functions to Demazure-Lusztig operators. We will also report on joint work in progress to establish the same result for Kac-Moody groups. (Received February 10, 2016)