

Geometry, Physics, and Representation Theory  
Northeastern University

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Wednesday, October 7, 12-1 pm, Lake Hall 509

**The Bernstein-Sato polynomial of the Vandermonde determinant  
and the Strong Monodromy Conjecture**

**Abstract.** The Bernstein-Sato polynomial, or b-function, is an important invariant in singularity theory, which is difficult to compute in general. We describe a few different results towards computing the b-function of the Vandermonde determinant  $\xi$ . In 1989, Eric Opdam computed the b-function of a related polynomial, and we use his result to produce a lower bound for the b-function of  $\xi$ . We use this lower bound and the Harish-Chandra homomorphism to prove a conjecture of Budur, Mustata, and Teitler for the case of finite Coxeter hyperplane arrangements, proving the Strong Topological Monodromy Conjecture in this case. In our second result, we use duality of some D-modules to show that the roots of this b-function of  $\xi$  are symmetric about  $-1$ . Finally, we use results about jumping coefficients together with Kashiwara's proof that the roots of a b-function are rational in order to prove an upper bound for the b-function of  $\xi$  and give a conjectured formula. This is a joint work with Asilata Bapat.