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**Heather M. Russell\*** (hrussell@math.uiowa.edu), University of Iowa Department of Mathematics, 15 MacLean Hall, Iowa City, IA 52242-1419, and **Julianna S. Tymoczko** (tymoczko@math.uiowa.edu), University of Iowa Department of Mathematics, 15 MacLean Hall, Iowa City, IA 52242-1419. *A geometric and combinatorial construction of the Springer representation.*

Springer varieties are subvarieties of the flag variety whose cohomology carries a representation of the symmetric group. Using Khovanov's construction of a family of Springer varieties  $X_{2n}$ , we apply topological techniques to obtain an explicit combinatorial definition of the Springer action on  $X_{2n}$ . We use this formulation to identify the Springer representations in *every* homology degree, proving the Springer representation on  $H_k(X_{2n})$  is the irreducible representation corresponding to the partition  $(2n - k, k)$ . (Received September 15, 2008)