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Matthew L. Bennett* (mbenn002@gmail.com), CA, and **Nathanael J. Manning** and **Vyjayanthi Chari**. *BGG reciprocity for the current algebra of \mathfrak{sl}_2* .

We study the category \mathcal{I} of graded representations with finite-dimensional graded pieces for the current algebra $\mathfrak{g} \otimes \mathbf{c}[t]$ where \mathfrak{g} is a simple Lie algebra. This category has many similarities with the category \mathcal{O} of modules for \mathfrak{g} and in this paper, we formulate and study an analogue of the famous BGG duality. We recall the definition of the projective and simple objects in \mathcal{I} which are indexed by a dominant integral weight and an integer. The role of the Verma modules is played by a family of modules called the global Weyl modules. We show that in the case when \mathfrak{g} is of type \mathfrak{sl}_2 , the projective module admits a flag in which the successive quotients are finite direct sums of global Weyl modules. The multiplicity with which a particular Weyl module occurs in the flag is determined by the multiplicity of a Jordan–Holder series for a closely associated family of modules, called the local Weyl modules. We conjecture that the result remains true for arbitrary simple Lie algebras. We also prove some combinatorial product–sum identities involving Kostka polynomials which arise as a consequence of our theorem. (Received September 21, 2011)