Bernstein, Gelfand and Gelfand gave a resolution of any irreducible finite dimensional representation $F$ of a complex semisimple Lie algebra $\mathfrak{g}$ in terms of sums of representations induced from one-dimensional representations of a Borel subalgebra $\mathfrak{b}$ of $\mathfrak{g}$. This result was extended by Lepowsky to give resolutions of $F$ in terms of sums of representations induced from finite dimensional representations of a parabolic subalgebra $\mathfrak{p}$ of $\mathfrak{g}$.

We will discuss what can be said if the finite dimensional representation $F$ is replaced by an irreducible highest weight representation $L$ of $\mathfrak{g}$. We will also present some applications of resolutions of infinite dimensional highest weight representations to algebraic geometry. (Received October 04, 2004)