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AN APPLICATION OF HODGE THEORY TO THE STUDY  
OF HARISH CHANDRA MODULES

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**Abstract:** In the past, so-called good filtrations of Harish Chandra modules were used to construct a geometric invariant of representations of reductive Lie groups. These filtrations were not canonical, and therefore produced only a relatively coarse invariant. Morihiko Saito's theory of mixed Hodge modules can be used to define canonical good filtrations. They have excellent functorial properties, but are very hard to compute. I shall describe our current state of knowledge. This is joint work with Kari Vilonen.