"Relaxed highest weight representations from D-modules on the Kashiwara flag scheme"

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The relaxed highest weight representations introduced by Feigin, Semikhatov and Tipunin are a special class of representations of the Lie algebra affine sl2 , which do not have a highest (or lowest) weight.

We formulate a generalization of this notion for an arbitrary affine Kac-Moody algebra g. We then

realize induced g-modules of this type and their duals as global sections of twisted D-modules

on the Kashiwara flag scheme associated to g. The D-modules that appear in our construction

are direct images from subschemes given by the intersection of finite dimensional Schubert cells with their translate by a simple reflection. Besides the twist, they depend on a complex number describing the monodromy

of the local systems we construct on these intersections. These results describe for the first time explicit

non-highest weight g-modules as global sections on the Kashiwara flag scheme and extend several

results of Kashiwara-Tanisaki to the case of relaxed highest weight representations. This is based on the preprint arxiv:1607.06342 [math.RT].