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CORRECTION AND COMPLEMENT TO THE PAPER

REGULARIZATION THEOREMS IN LIE ALGEBRA COHOMOLOGY. APPLICATIONS.

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1. In that paper, to be referred to by [2], it is proved that the cohomology of an arithmetic subgroup Γ of the group G of real points of a connected reductive $\mathbb{Q}$-group without nontrivial rational character defined over $\mathbb{Q}$, with coefficients in a finite dimensional complex G-module E, can be computed as the relative Lie algebra cohomology with coefficients in the space $C^{\infty}_{umg}(\Gamma\backslash G) \otimes E$, where $C^{\infty}_{umg}(\Gamma\backslash G)$ denotes the space of smooth functions on $\Gamma\backslash G$ of uniform moderate growth [2: 3.1]. This is deduced, by an application of the regularization theorem 2.1 of [2], from a similar statement, where $C^{\infty}_{umg}(\Gamma\backslash G)$ is replaced by the space $C^{\infty}_{mg}(\Gamma\backslash G)$ of smooth functions which, together with their $U(\mathfrak{g})$-derivatives have moderate growth, but where the bound on the growth may depend on the derivative (whereas there is a uniform one for elements of $C^{\infty}_{umg}(\Gamma\backslash G)$). For this latter fact, I referred to 3.4 of [1]. However, as Michael Harris pointed out to me, the notion of differential form of moderate growth used there is not the same as the one just mentioned, whence a gap. The purpose of this Note is to fill it. We assume full familiarity with [1], [2], and use the notation there without further comment. In addition, we let $C^{\infty}_{(mg)}(\Gamma\backslash G)$ be the space of smooth functions of moderate growth on $\Gamma\backslash G$.

2. In [2], we consider the complex

$$A^{\infty}_{mg}(\Gamma\backslash G; \tilde{E}) = C^*(\mathfrak{g}, K; C^{\infty}_{mg}(\Gamma\backslash G) \otimes E) \tag{1}$$

of smooth differential forms with moderate growth and the natural inclusion

$$A^{\infty}_{mg}(\Gamma\backslash X; \tilde{E}) \to A^{\infty}((\Gamma\backslash X); \tilde{E}) \tag{2}$$

or, equivalently,

$$i\colon C^*(\mathfrak{g}, K; C^{\infty}_{mg}(\Gamma\backslash G) \otimes E) \to C^*(\mathfrak{g}, K; C^{\infty}(\Gamma\backslash G) \otimes E) \tag{3}$$

and need to know

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