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L-function of cuspidal representations of $G_2$ and their poles

Abstract:

In this talk I will describe a family of integral representations for the standard twisted $L$-function of a cuspidal representation of the exceptional group of type $G_2$. This integral representations. These integral representations are unusual in the sense that they unfold with a non-unique model. A priori this integral is not Eulerian but using remarkable machinery proposed by I. Piatetski-Shapiro and S. Rallis we prove that in fact the integral does factor. In the course of the plocal unramified calculation we use another non-standard method, approximations of generating functions. I will then describe a few applications of these integral representations to the study of the analytic behaviour of the this $L$-function and to various functorial lifts associated with the group $G_2$. 