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Combinatorial approach to root multiplicities of rank two hyperbolic Kac-Moody algebras. Preliminary report.

Root multiplicities are fundamental data in the structure of a Kac-Moody algebra. For finite and affine Kac-Moody algebras, root multiplicities are completely known. However, root multiplicities of hyperbolic Kac-Moody algebras are still mysterious. In this talk, we will consider a new combinatorial approach to root multiplicities of rank two hyperbolic Kac-Moody algebras. (Received September 03, 2014)