

1040-22-76

Matvei Libine* (matvei.libine@yale.edu), Yale University, Mathematics Department, PO Box 208283, New Haven, CT 06520. *Quaternionic Analysis, Representation Theory and Physics*.

This is a joint work with Igor Frenkel.

I will describe our new developments of quaternionic analysis using as a guiding principle representation theory of various real forms of the conformal group. Along the way we discover striking new connections between quaternionic analysis and mathematical physics. In particular, the Maxwell equations are realized as the quaternionic counterpart of the Cauchy formula for the second order pole. We also find a representation-theoretic meaning of the polarization of vacuum and one-loop Feynman integrals. (Received January 24, 2008)