1065-17-214 **Alex J Feingold*** (`alex@math.binghamton.edu`), Dept of Math Sci, Binghamton University, Vestal Parkway East, Binghamton, NY 13902-6000, and **Quincy Loney**. *Spinor construction of representations of affine Kac-Moody algebras of types $G_2^{(1)}$ and $D_4^{(3)}$.* Preliminary report.

In Contemp Math, Vol. 121, Feingold, Frenkel and Ries gave a spinor construction of the vertex operator para-algebra $V = V^0 \oplus V^1 \oplus V^2 \oplus V^3$, whose summands are 4 level-1 irreps of the affine Kac-Moody algebra $D_4^{(1)}$. The triality group S_3 acts on V, preserving V^0, permuting V^i, $i = 1, 2, 3$. V is $\frac{1}{2}\mathbb{Z}$-graded and V_n^i denotes the n-graded subspace of V^i. Vertex operators from V_1^0 represent $D_4^{(1)}$ on V. The 8-dim spaces $V_{1/2}^i$, $i = 1, 2, 3$, are the natural and two spinor modules of D_4, and their direct sum is the 24-dim Chevalley algebra C. The eigenspace decomposition of the order 3 element $\sigma \in S_3$ on D_4 gives the fixed point subalgebra G_2, and two 7-dim irreps. This lifts to V so that the vertex operators from fixed points of V_1^0 represent the affine algebra $G_2^{(1)}$. Including vertex operators from the other eigenspaces of σ in V_1^0, one should obtain the twisted affine algebra $D_4^{(3)}$. This dissertation research of QL studies the decomposition of V with respect to these two affine algebras, thus obtaining spinor constructions of representations of $G_2^{(1)}$ and $D_4^{(3)}$. (Received September 14, 2010)