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**Matyas Domokos\*** (domokos@renyi.hu), Renyi Institute of Mathematics, Hungarian Academy of Sciences, Reáltanoda utca 13-15., Budapest, H-1053, Hungary. *On the invariant theory of the orthogonal group.*

In our joint work with Péter Frenkel [Adv. Math. 192 (2005), 209-217] we constructed high degree polynomial invariants of the orthogonal group acting on several vectors, that are indecomposable in characteristic two (hence they are indecomposable over the ring of integers). In the talk we report on a new explanation of these exotic invariants, and on steps taken towards the understanding of the relations between them, as well as the combinatorics of the ring of orthogonal vector invariants in characteristic two. We shall have an outlook to connections with rings of matrix invariants and with the defining relations of the ring of multisymmetric functions. (Received September 25, 2006)