September 10: Yuval Roichman (Bar Ilan University), "A unified construction of Coxeter Group Representations."

The goal of this work is to give a new unified axiomatic approach to the representation theory of Coxeter groups and their Hecke algebras. Building upon fundamental works by Young, Kazhdan-Lusztig and Vershik, we propose a direct combinatorial construction, avoiding *a priori* use of external concepts (such as standard Young tableaux). This is carried out by a natural assumption on the representation matrices. For simply laced Coxeter groups, this assumption yields explicit simple matrices, generalizing the Young forms. For the symmetric groups (and for Weyl groups of type B) the resulting representations are completely classified and contain the irreducible ones. Analysis involves generalized descent classes and convexity (*à la* Tits) within the Hasse diagram of the weak Bruhat poset.

This is a joint work with Ron Adin and Francesco Brenti.