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Mahir Bilen Can* (mcan@tulane.edu), Department of Mathematics, Tulane University, New Orleans, LA 70118, and **Michael Joyce** and **Benjamin Wyser**. *Maximal chains in weak orders on Borel orbits of some symmetric spaces.*

The \mathcal{W} -set of an element of a weak order poset is useful in the cohomological study of the closures of spherical subgroups in generalized flag varieties. We explicitly describe in a purely combinatorial manner the \mathcal{W} -sets of the weak order posets of three different sets of involutions in the symmetric group, namely, the set of all involutions, the set of all fixed point free involutions, and the set of all involutions with signed fixed points (or “clans”). These distinguished sets of involutions parameterize Borel orbits in the classical symmetric spaces associated to the general linear group. In particular, we give a complete characterization of the maximal chains of an arbitrary lower order ideal in any of these three posets. (Received September 22, 2014)