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Jason Williford* (jwillif1@uwyo.edu), Department of Mathematics, College of Arts & Sciences, Dept. 3036. 1000 E. University, Laramie, WY 82071. *Subset bounds in association schemes and coherent configurations.*

An association scheme can be viewed as a generalization of a transitive group action on a finite set, where one substitutes certain local symmetry conditions in place of an actual group. A coherent configuration is an analogous generalization of a (possibly intransitive) group action on a finite set. Many objects in design theory, coding theory, finite geometry can be described as association schemes and/or coherent configurations. In Delsarte's thesis, he described necessary conditions for the existence of hypothetical subsets in association schemes. These conditions were in the form of a linear programming problem, and became known as the linear programming bound. This was then applied to obtain new bounds for codes and designs. When any of the inequalities in this bound is tight, one can recover certain regularity conditions between the subset and a fixed point. In this talk we will describe a generalization of this bound for coherent configurations, and give an analogous result when the bound is tight, including some examples. This is joint work with Sylvia Hobart. (Received March 05, 2013)