1090-05-308 **Benjamin C Cooper*** (cooper@math.colostate.edu). *Nonexistence of certain abstract hyperovals of order 12.*

Abstract hyperovals were introduced by Buekenhout in 1966, as a generalization of hyperovals in finite projective planes. The major open problem in the area is to show that they must have order a power of 2. Here we show the nonexistence of an abstract hyperoval of order 12 admitting a group of order 11 or 13. This latter result is a generalization of a 1997 result of Prince, who showed the nonexistence of an abstract hyperoval of order 12 admitting a Frobenius group of order 39. Our result is equivalent to showing the nonexistence of a partial geometry with parameters (6,10,5) with a group of order 11 or 13. The nonexistence of an abstract hyperoval of order 10 was shown in 1983 by Lam, Thiel, Swiercz and McKay in as part of the proof of the nonexistence of a projective plane of order 10, so order 12 is the smallest open case. This is joint work with Tim Penttila. (Received March 04, 2013)