

Meeting: 999, Nashville, Tennessee, SS 13A, Special Session on Semigroup Theory

999-20-58 **Sydney D Bulman-Fleming*** (sbulman@wlu.ca), Department of Mathematics, Wilfrid Laurier University, Waterloo, Ontario N2L 3C5, Canada. *Flatness Properties of S -posets.*

If S is a monoid, a right S -act A_S is a non-empty set A together with an associative, unital right S -action. For the past several decades, so-called flatness properties of S -acts, ranging from projectivity to torsion freeness, have been studied, properties that can mostly be formulated in terms of preservation properties of a tensor product functor. That research deals with the structure of acts having certain flatness properties, and with so-called homological classification problems: what conditions on S guarantee that all S -acts have a certain flatness property, or that particular, generally distinct, properties coincide? (In module theory, analogs are the studies of absolutely flat rings and perfect rings, over which all modules are flat, or all flat modules are projective, respectively.) In the 1980s, flatness properties of S -posets were introduced: here, S is an ordered monoid, and the S -acts also carry a partial order making the S -action monotone in both arguments. In the past year or so, after a long period of dormancy, research in this area has recommenced. This report presents a survey of recent progress in the study of flatness properties of S -posets. (Received July 31, 2004)