1154-VV-2382 **Eugene Fiorini** (eugenefiorini@muhlenberg.edu) and **Bryan Walker*** (walkebw0@sewanee.edu), 193 Edgewood Lane, Winchester, TN 37398, and **Sabrina Traver**, **Robert Argus**, **Cristian Hernandez** and **Benjamin Nagle**. *The Topological Structure of a Family of Excellent Morse Functions.*

A smooth function f of n variables is called an excellent Morse function, if every critical point is distinct and non-degenerate. For a Morse function of two variables, all critical points are local maxima, minima, or saddle points. The topological structure of a two-variable Morse function on a compact domain has finitely many critical points and can be associated with a tree, called an A-tree, whose vertices are the connected components of the level surfaces of the function. Each vertex is of degree 1 (local maximum or minimum) or 3 (saddle point). Counting the number of excellent Morse functions associated with each tree is equivalent to playing a game of "plates and olives," introduced by Liviu I. Nicolaescu, in which a plate or olive is added, combined, or removed depending on whether the associated vertex is a local maximum, local minimum, or saddle point. In this talk we discuss results which involve encoding the topological structure of excellent Morse functions on the 2-sphere in an A-tree and attempt to enumerate the number of successful games. That is, we consider the minimum number of ways in which a game of plates and olives can be resolved to an empty plate for a specific family of A-trees called A_{IN}-trees. (Received September 17, 2019)