Robert Ghrist* (ghrist@math.upenn.edu) and Sanjeevi Krishnan (sanjeevi@math.osu.edu). Directed sheaf co/homology for pursuit-evasion games.

Considered is a class of pursuit-evasion games, in which an evader tries to avoid detection. Such games can be formulated as the search for sections to the complement of a coverage region in a Euclidean space over a timeline. Prior results give homological criteria for evasion in the general case that are not necessary and sufficient. This will detail a new necessary and sufficient positive cohomological criterion for evasion in a general case. The principal tools are a cone-valued positive sheaf co/homology theory, combined with Alexander duality. We show how a cellular version of this sheaf over the time axis makes positive cohomology (and the evasion criterion) computable as a linear program. (Received September 15, 2016)