1047-51-149   **Ian Biringer*** (`biringer@uchicago.edu`), 1511 E 54th St, Apt 2, Chicago, IL 60615. *A combinatorial property of isometric Z-actions and geodesic flow.*

The classical 3-gap theorem states that at most 3 distinct distances occur between nearest neighbor points in any segment of an orbit of a rotational Z-action on the circle. We will investigate generalizations of this phenomenon in dimension 2; in particular, we will characterize surfaces whose geodesic flows have a similar property. (Received January 26, 2009)