Mapping the harmonic archipelago

Wolfram Hojka

Vienna University of Technology, Austria
w.hojka@gmail.com

Session: 37. Wild algebraic and geometric topology

The harmonic archipelago is a standard example of a two-dimensional space with unusual properties, regarding its algebraic topology. The space is homeomorphic to a disc but for a single point and can be described as the reduced suspension of the graph of the topologist's sine curve $y = \sin(1/x)$. On the other hand it also has a natural interpretation as a mapping cone over a wedge of circles.

We will see how these equivalences come about topologically, then turn to the similarly curious algebraic mapping properties of its fundamental group G. For example, every countable locally free group embeds in G as a subgroup, and in turn, every separable profinite group is an epimorphic image.