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**A strong topological non-uniqueness result for free boundary minimal surfaces**

Abstract: The study of free boundary minimal surfaces (namely: of critical points for the area functional in the category of relative cycles), which goes back at least to Courant, has played a distinguished role within the class of geometric variational problems for almost a century. Yet, several fundamental questions remain open. For instance, is it possible to realise any orientable, compact surface with boundary as a free boundary minimal surface in the Euclidean unit ball? And, if so, are such realisations unique modulo ambient isometries? I will present significant advances on these two questions, including a (very recent) strong non-uniqueness result. In joint work with M. Schulz and D. Wiygul, we showed that the topology and symmetry group of a free boundary minimal surface in the Euclidean unit ball do not determine the surface uniquely: for any sufficiently large integer  $g$  there exist in the unit ball two distinct, properly embedded, free boundary minimal surfaces having genus  $g$ , three boundary components and symmetry group coinciding with the antiprismatic group of order  $4(g + 1)$ .