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One of the major trends in mathematics over the last fifty years has been the massive use of analytic techniques to attack fundamental open problems in geometry, a striking achievement being Perelman's proof of the Poincaré conjecture. The research of Alessandro Carlotto fits within that framework, and aims at advancing our understanding of essential concepts such as those of *shape* and *curvature*, both in their purest terms and in connection with theoretical physics.

Among his main, most surprising contributions we mention here the construction, jointly with Richard Schoen, of exotic, localized solutions for the Einstein field equations in general relativity (which were the object of the 2016 Séminaire Bourbaki in Paris) as well as the recent solution, jointly with Giada Franz and Mario B. Schulz, of the well-known problem whether there exist in the unit Euclidean ball free boundary minimal surfaces with connected boundary and any positive genus, a question that resisted mathematical attacks for almost forty years. In just over a decade, his work has touched a variety of topics, displaying mastery of very diverse techniques, including the use of parabolic evolution methods, in the form of the singular Ricci flow designed by Kleiner-Lott and Bamler-Kleiner, to ultimately prove - with Chao Li - that on any compact 3-manifold the space of positive scalar curvature metrics with minimal boundary is either empty or contractible.

Alessandro Carlotto has presented his work at a number of major mathematical events, has held several distinguished visiting positions – including his membership at the Institute for Advanced Study in Princeton for the special year 2018-2019 - and currently serves as the principal investigator for the European project *CHallenges in ANalysis and GEometry*.