DISCUSSION

Comments on: Recent progress on the combinatorial diameter of polytopes and simplicial complexes

Jean-Baptiste Hiriart-Urruty

F. SANTOS' work is a solid survey-paper on a topic that I would cover with the following keywords: *polyhedra, linear programming, graph theory*. First of all, I must confess that I like to read (and, occasionally, to write) survey papers: They mark a pause in the hectic racing for publishing papers, and allow us to take stock on questions in a given area. I would even say that, when looking at the way my colleagues (the youngest ones, but also some others not so young): "*Everybody writes, nobody reads…*"

I remember to have learned about the Hirsch conjecture in a discussion with my colleague PAUL ARMAND from the university of Limoges. I then decided to study it a bit, and to present it in a simple and understandable way; it was my Problem 1 in the series published in my paper (Hiriart-Urruty 2007).

If the reader wants to know about the Hirsch conjecture, where it came from, how it evolved, how F. SANTOS came to answer it, I would recommend the interview (Miranda 2012).

The present survey is divided into four parts. The first one, the Introduction, clearly states what is going to be presented, what will be skipped, etc. Sections 2 and 3 are more technical and destined for specialists of the area, and I am sure that their mouth is watering in anticipation. Part 4 comes back to easier-to-follow affairs.

The interest in a conjecture is, not only to answer it (yes, it is true or no, there is a counterexample), but *the new mathematics and questions it has generated*. That is the case with Hirsch conjecture, and F. SANTOS' survey-paper proposes a list of open questions; an interested reader would like to jump at them.

J.-B. Hiriart-Urruty (✉)
Paul Sabatier University, Toulouse, France
e-mail: jbhu@math.univ-toulouse.fr

Let me finish with two statements, also quoted in Hiriart-Urruty (2007, 2009), that I propose to the thinking of potential readers.

"*Some problems open doors, some problems close doors, and some remain curiosities, but all sharpen wits and act a challenge and a test of our ingenuity and techniques,*" M. Atiyah in the preface of Mathematics: frontiers and perspectives (2000, by the International Mathematical Union, published by the American Mathematical Society).

"*There are no solved problems, there are only more-or-less solved problems,*" H. Poincaré.

References

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Miranda E (2012) The Hirsch conjecture has been disproved, interview of Francisco Santos. In: The newsletter of the European mathematical society, pp 31–36