Preface Issue 1-2016

Hans-Christoph Grunau¹

© Deutsche Mathematiker-Vereinigung and Springer-Verlag Berlin Heidelberg 2016

Keeping systems (almost) forever within a range of acceptable states at lowest possible costs is the objective of “infinite horizon optimal control”. To really find and calculate an (almost) optimal control strategy is, however, most difficult and in many cases almost impossible. In order to do this, it would indeed be necessary to calculate the effect of possible controls for infinitely many time steps. In reality, decisions are made by thinking a couple of time steps ahead. This means that the strategy will be chosen by solving “finite horizon optimal control” problems. But thinking e.g. of public budgets, investment strategies of companies or of the maintenance of cars, houses or public infrastructure makes it obvious that the control strategy will in many cases sensitively depend on the chosen time horizon. Lars Grüne addresses this question and explains in a very comprehensible way under which conditions solutions of “receding horizon optimal control” problems could serve as a reliable approximation for infinite horizon problems.

Stefan Hildebrandt passed away unexpectedly on October 16, 2015. Many people will consider him as the German mathematician who has been in the past decades most intensively involved in the theory of minimal surfaces. His former student Jürgen Jost reviews some of his most fundamental contributions in this field and also to other topics in geometric analysis like e.g. harmonic maps.

In the “book reviews” section new releases concerning topics from Riemannian and conformal geometry, rational homotopy theory, and from Garside theory are critically assessed.

✉ H.-Ch. Grunau
hans-christoph.grunau@ovgu.de

¹ Institut für Analysis und Numerik, Fakultät für Mathematik, Otto-von-Guericke-Universität, Postfach 4120, 39016 Magdeburg, Germany