

MATHEMATISCHES FORSCHUNGSINSTITUT OBERWOLFACH

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## Discrete Differential Geometry

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ABSTRACT. This is the collection of extended abstracts for the 26 lectures and the open problems session at the second Oberwolfach workshop on Discrete Differential Geometry.

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### Introduction by the Organisers

Discrete Differential Geometry is an active mathematical terrain where differential geometry (the theory of smooth manifolds, providing notions of curvature, flows, integrability, etc.) interacts with discrete geometry (concerned with polyhedral surfaces, frameworks and their rigidity, polytopes and their subdivisions, etc.), using tools and ideas from all parts of mathematics, including, for example, conformal geometry, integrable systems, algebraic combinatorics, mathematical physics (discrete electrodynamics, hydrodynamics and elasticity), computational geometry, and geometry processing.

In view of two books entitled “Discrete Differential Geometry” – the proceedings of the 2004 Oberwolfach Seminar (Birkhäuser 2008) and the recent volume by Bobenko & Suris (AMS 2008) – as well as a number of workshops in recent years (St. Petersburg 2003, Oberwolfach 2006, Berlin 2007) treating the subject, it can be said that Discrete Differential Geometry has started to be a well-established mathematical discipline. Nevertheless, the boundaries of the field are not fixed;

quite to the contrary, it is branching out into new directions, and new and sometimes unexpected connections and lines of development appear frequently – as can also be seen in the following pages.

The present collection of extended abstracts documents the lectures and the open problems session at the second Oberwolfach workshop on Discrete Differential Geometry. It records a successful and very active workshop, and thus presents a multi-faceted picture of the field. We are grateful to all the participants of the Workshop for their manifold contributions, and to the institute in Oberwolfach and all its staff for providing, once again, a perfect setting for this.