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Altri autori (Persone)	JuttlerB (Bert) PieneRagni DokkenTor
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Soggetti	Geometry, Algebraic Mathematical models Computer graphics Information visualization Computational intelligence Algebraic Geometry Mathematical Modeling and Industrial Mathematics Computer Graphics Data and Information Visualization Computational Intelligence
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Livello bibliografico	Monografia
Note generali	Revised papers from a workshop series on computational methods for algebraic spline surfaces held in Oslo, Norway in Sept. 14-16, 2005 which was aligned with the final review of the European project GAIA II entitled "Intersection algorithms for geometry based IT-applications using approximate algebraic methods" (IST 2001-35512).
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Survey of the European project GAIA II -- The GAIA Project on Intersection and Implicitization -- Some special algebraic surfaces -- Some Covariants Related to Steiner Surfaces -- Real Line Arrangements and Surfaces with Many Real Nodes -- Monoid Hypersurfaces -- Canal

Surfaces Defined by Quadratic Families of Spheres -- General Classification of (1,2) Parametric Surfaces in  $\mathbb{R}^3$  -- Algorithms for geometric computing -- Curve Parametrization over Optimal Field Extensions Exploiting the Newton Polygon -- Ridges and Umbilics of Polynomial Parametric Surfaces -- Intersecting Biquadratic Bézier Surface Patches -- Cube Decompositions by Eigenvectors of Quadratic Multivariate Splines -- Subdivision Methods for the Topology of 2d and 3d Implicit Curves -- Approximate Implicitization of Space Curves and of Surfaces of Revolution.

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Sommario/riassunto

The two fields of Geometric Modeling and Algebraic Geometry, though closely related, are traditionally represented by two almost disjoint scientific communities. Both fields deal with objects defined by algebraic equations, but the objects are studied in different ways. While algebraic geometry has developed impressive results for understanding the theoretical nature of these objects, geometric modeling focuses on practical applications of virtual shapes defined by algebraic equations. Recently, however, interaction between the two fields has stimulated new research. For instance, algorithms for solving intersection problems have benefited from contributions from the algebraic side. The workshop series on Algebraic Geometry and Geometric Modeling (Vilnius 12 2002 , Nice 2004 ) and on Computational Methods for Algebraic Spline Surfaces 3 (Kefermarkt 2003 , Oslo 2005) have provided a forum for the interaction between the two fields. The present volume presents revised papers which have grown out of the 2005 Oslo workshop, which was aligned with the final review of the European project GAIA II, entitled Intersection algorithms for geometry based IT-applications 4 using approximate algebraic methods (IST 2001-35512)

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