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Nota di contenuto	Optical caustics and their modelling as singularities / Alain Joets -- On local equisingularity / Helmut A. Hamm -- Jet schemes of homogeneous hypersurfaces / Shihoko Ishii, Akiyoshi Sannai, Kei-ichi Watanabe -- Singularities in relativity / Tatsuhiko Koike -- On the universal degenerating family of Riemann surfaces / Yukio Matsumoto -- Algebraic local cohomologies and local \mathbb{Z} -functions attached to semiquasihomogeneous singularities with $L(f)=2$ / Yayoi Nakamura, Shinichi Tajima -- A note on the Chern-Schwartz-MacPherson class / Toru Ohmoto -- On mixed projective curves / Mutsuo Oka -- Invariants of splice quotient singularities / Tomohiro Okuma -- A note on the toric duality between the cyclic quotient surface singularities $A_{n,q}$ and $A_{n,n-q}$ / Oswald Riemenschneider -- Nearby cycles and characteristic classes of singular spaces / Jorg Schurmann -- Residues of singular holomorphic distributions / Tatsuo Suwa -- Two birational invariants in statistical learning theory / Sumio Watanabe -- Frobenius morphisms of noncommutative blowups / Takehiko Yasuda -- Bivariant motivic Hirzebruch class and a zeta function of motivic Hirzebruch class / Shoji Yokura -- Minimality of hyperplane arrangements and basis of local system cohomology /

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Sommario/riassunto

This volume arises from 5th Franco-Japanese Symposium on Singularities, held in Strasbourg in August 2009. The conference brought together an international group of researchers working on singularities in algebraic geometry, analytic geometry and topology, mainly from France and Japan. Besides, it also organized a special session, JSPS Forum on Singularities and Applications, which was aimed to introduce some recent applications of singularity theory to physics and statistics. This book comprises research papers and short lecture notes on advanced topics on singularities. Some surveys on applications that were presented in the Forum are also added. Topics covered include splice surface singularities, b-functions, equisingularity, degenerating families of Riemann surfaces, hyperplane arrangements, mixed singularities, jet schemes, noncommutative blow-ups, characteristic classes of singular spaces, and applications to geometric optics, cosmology and learning theory. Graduate students who wish to learn about various approaches to singularities, as well as experts in the field and researchers in other areas of mathematics and science will find the contributions to this volume a rich source for further study and research.
