

## CONTENTS

### Plenary Lectures

Philippe BIANE — From Pitman's theorem to crystals	1
Tomohiro HARADA — Singularities and self-similarity in gravitational collapse	15
Shyuichi IZUMIYA — Horospherical geometry in the hyperbolic space	31
Hiroaki KANNO — Instanton counting and the chiral ring relations in supersymmetric gauge theories	51
Yasuyuki KAWAHIGASHI — Superconformal field theory and operator algebras	69
Patrick POPESCU-PAMPU — Iterating the hessian: a dynamical system on the moduli space of elliptic curves and dessins d'enfants	83
San VŨ NGŨC — Quantum Birkhoff normal forms and semiclassical analysis	99
Ken-ichi SUGIYAMA — On geometric analogues of Iwasawa main conjecture for a hyperbolic threefold	117
Yoshie SUGIYAMA — Partial regularity and its application to the blow-up asymptotics of parabolic systems modelling chemotaxis with porous medium diffusion	137
Takao YAMAGUCHI — Upper curvature bounds and singularities	161
Yosef YOMDIN and Gal ZAHAVI — High-order processing of singular data	173

### Research Articles

Siegfried ECHTERHOFF, Ryszard NEST and Herve OYONO-OYONO — An analogue of Serre fibrations for $C^*$ -algebra bundles	209
Kazuhito FUJIWARA, Hiroshi ITOYAMA and Makoto SAKAGUCHI — Spontaneous partial breaking of $\mathcal{N} = 2$ supersymmetry and the $U(N)$ gauge model	223
Kiyonori GOMI — An analogue of the space of conformal blocks in $(4k + 2)$ -dimensions	235

Masahiro KASATANI and Yoshihiro TAKEYAMA — The quantum Knizhnik–Zamolodchikov equation and non-symmetric Macdonald polynomials	249
Yukiko KONISHI — Local Gromov–Witten invariants of cubic surfaces	263
Satoshi MINABE — Flop invariance of the topological vertex	269
Hiromasa MORIUCHI — A table of $\theta$ -curves and handcuff graphs with up to seven crossings	281
Hajime NAGOYA — A quantization of the sixth Painlevé equation	291
Yuichi NOHARA — Lagrangian fibrations and theta functions	299
Yuji OGAWA — Generalized Q-functions and UC hierarchy of B-type	309
Mikaël PICHOT — The space of triangle buildings	321
Masayoshi WATANABE — Ends of metric measure spaces with non-negative Ricci curvature	335
Saeko YAMAGATA — On ideal boundaries of some Coxeter groups	345
Takahiko YOSHIDA — On manifolds which are locally modeled on the standard representation of a torus	353