

# CONTENTS

---

	Page
Seoung Dal JUNG, Soon Chan KIM and Jeong Hyeong PARK: New estimates for eigenvalues of the basic Dirac operator . . . . .	441
Lingling KONG and Donghe PEI: Singularities of tangent lightcone map of a timelike surface in Minkowski 4-space . . . . .	455
Osamu FUJINO: Effective base point free theorem for log canonical pairs—Kollár type theorem . . . . .	475
Yuichi SHIOZAWA: Localization for branching Brownian motions in random environment . . . . .	483
Shouhei HONDA: Ricci curvature and almost spherical multi-suspension . . . . .	499
Hiroshi MORI and Norio SHIMAKURA: Isometric immersions of Euclidean plane into Euclidean 4-space with vanishing normal curvature . . . . .	523
Kuniaki HORIE and Mitsuko HORIE: The ideal class group of the $\mathbf{Z}_p$ -extension over the rationals . . . . .	551
Masayoshi NAGASE: The Laplacian and the heat kernel acting on differential forms on spheres . . . . .	571
Pietro CORVAJA, Aaron LEVIN and Umberto ZANNIER: Integral points on threefolds and other varieties . . . . .	589

Tohoku Mathematical Journal is pleased to announce its new open access policy. As of April, 2010, all articles in the past volumes below can be freely accessed through Project Euclid (<http://projecteuclid/tmj>) and Journal@rchive (<http://www.journalarchive.jst.go.jp>).

1. All volumes in the First Series (1911–1943)
2. Volumes in the Second Series (1949–) after a lapse of five years

Authors who prefer to opt out of this arrangement are requested to contact the Editorial Office at [tmj@math.tohoku.ac.jp](mailto:tmj@math.tohoku.ac.jp). A list of all articles in both series, arranged in alphabetical order of the authors, is available at <http://www.math.tohoku.ac.jp/tmj/Especial.html>.

For Policy, see <http://www.math.tohoku.ac.jp/tmj/Emain.html>.