



Hideo KOJIMA, Ph.D.

Professor, Vice Dean

Program: Fundamental Sciences

Area: Mathematical Sciences

Undergraduate: Dept. of Science

Professional Expertise

His professional expertise encompasses affine algebraic geometry, which is a branch of algebraic geometry and studies algebraic varieties with more emphasis put on affine varieties and with possible application to finitely generated algebras. He has developed classification of affine algebraic surfaces, classification of log projective surfaces and derivations on polynomial rings.

Research Fields of Interest

Affine algebraic geometry

- Affine algebraic varieties
- Polynomial rings
- Derivations and higher derivations

Algebraic Geometry

- Log algebraic surfaces
- Log Mori program

Education

1999: Doctoral Sci. degree, Graduate School of Science, Osaka University, Japan

1997: Master Sci. degree, Graduate School of Science, Osaka University, Japan

1995: Bachelor Sci. degree, Graduated from Department of Mathematics, Faculty of Science, Niigata University, Japan

Professional Societies and Activities

Mathematical Society of Japan

Major Publications

Papers

- [1] H. Kojima and M. Miyanishi, On Roberts' counterexample to the fourteenth problem of Hilbert, *Journal of Pure and Applied Algebra*, Vol. 122, No. 3, 1997, 277–292.
- [2] Hideo Kojima, Almost minimal embeddings of quotient singular points into rational surfaces, *Journal of Mathematics of Kyoto University*, Vol. 38, No. 1, 1998, 77–99.
- [3] Hideo Kojima, Logarithmic del Pezzo surfaces of rank one with unique singular points, *Japanese Journal of Mathematics*, Vol. 25, No. 2, 1999, 343–375.
- [4] Hideo Kojima, Open rational surfaces with logarithmic Kodaira dimension zero, *International Journal of Mathematics*, Vol. 10, No. 5, 1999, 619–642.
- [5] Hideo Kojima, On Veys' conjecture, *Indagationes*

Mathematicae, Vol. 10, No. 4, 1999, 537–538.

[6] Hideo Kojima, Complements of plane curves with logarithmic Kodaira dimension zero, *Journal of the Mathematical Society of Japan*, Vol. 52, No. 4, 2000, 793–806.

[7] Hideo Kojima, On normal surfaces with strictly nef anticanonical divisors, *Archiv der Mathematik*, Vol. 77, No. 6, 2001, 517–521.

[8] Hideo Kojima, Open surfaces of logarithmic Kodaira dimension zero in arbitrary characteristic, *Journal of the Mathematical Society of Japan*, Vol. 53, No. 4, 2001, 933–955.

[9] Hideo Kojima, Structure of affine surfaces $P^2 - B$ with $\kappa \leq 1$, *Journal of Algebra*, Vol. 253, No. 1, 2002, 100–111.

[10] Hideo Kojima, Algebraic compactifications of some affine

surfaces, *Algebra Colloquium*, Vol. 9, No. 4, 2002, 417–425.

[11] Hideo Kojima, A note on Sakai's theorem concerning polarized normal surfaces, *Archiv der Mathematik*, Vol. 80, No. 3, 2003, 239–244.

[12] Hideo Kojima, Rank one log del Pezzo surfaces of index two, *Journal of Mathematics of Kyoto University*, Vol. 43, No. 1, 2003, 101–123.

[13] Hideo Kojima, On the logarithmic plurigenera of complements of plane curves, *Mathematische Annalen*, Vol. 332, No. 1, 2005, 1–15.

[14] Takashi Kishimoto and Hideo Kojima, Affine lines on $\mathbb{Q}$ -homology planes with logarithmic Kodaira dimension $-\infty$, *Transformation Groups*, Vol. 11, No. 4, 2006, 659–672.

[15] Hideo Kojima, On the logarithmic bigenera of some affine surfaces, *Affine Algebraic Geometry* (edited by T. Hibi), pp. 257–273, Osaka Univ. Press, 2007.

[16] Hideo Kojima, Logarithmic plurigenera of smooth affine surfaces with finite Picard groups, *Commentarii Mathematici Helvetici*, Vol. 83, No.3, 2008, 547–571.

[17] Hideo Kojima and Takeshi Takahashi, Notes on minimal compactifications of the affine plane, *Annali di Matematica Pura ed Applicata*, Vol.188, No. 1, 2009, 153–169.

[18] Hideo Kojima and Norihiro Wada, Kernels of higher derivations in $\mathbb{R}[x, y]$, *Communications in Algebra*, Vol. 39, No. 5, 2011, 1577–1582.

[19] Yuki Ito and Hideo Kojima, An algorithm for computing the kernel of a locally finite higher derivation up to a certain degree, *Colloquium Mathematicum*, Vol. 122, No. 1, 2011, 21–31.

[20] Hideo Kojima, On the kernels of some higher derivations in polynomial rings, *Journal of Pure and Applied Algebra*, Vol. 215, No. 10, 2011, 2512–2514.

[20] Hideo Kojima and Takeshi Takahashi, Normal del Pezzo surfaces of rank one with log canonical singularities, *Journal of Algebra*, to appear.

Books

[1] Yoshihara, H., Takeuchi, T., Innami, N., Tanaka, T., and Kojima, H., *Linear Algebra* (in Japanese), Baifukan.