

研究タイトル：

特殊関数と可積分系



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キーワード：可積分系、パンルヴェ方程式、特殊解、テータ関数

技術相談
提供可能技術：

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研究内容：

パンルヴェ方程式やその拡張について、一般には特殊関数や代数関数では解けませんが、解ける場合がありこのような解を特殊解と呼びます。特殊解には数学的に豊かな構造があることが知られています。私は特殊解を分類したり構成したりしてきました。最近ではテータ関数の数論への応用やテータ定数の関係式などに関心を持っております。

- [1]K. Matsuda, Isomonodromic deformations with an irregular singularity and the elliptic θ -function. J. Phys. A 40 (2007), no. 39, 11939–11960.
- [2]K. Matsuda, Isomonodromic deformations with an irregular singularity and hyperelliptic curves. J. Phys. A 43 (2010), no. 11, 115205, 20 pp.
- [3]K. Matsuda, Rational solutions of the Sasano system of type $A_5^{(2)}$. SIGMA Symmetry Integrability Geom. Methods Appl. 7 (2011), Paper 030, 20 pp.
- [4]K. Matsuda, Rational solutions of the Noumi and Yamada system of type $A_4^{(1)}$. J. Math. Phys. 53 (2012), no. 2, 023504, 35 pp.
- [5]K. Matsuda, Rational solutions of the Sasano system of type $D_3^{(2)}$. Kyushu J. Math. 66 (2012), no. 1, 1–20.
- [6]K. Matsuda, Mixed sums of squares and triangular numbers, Far East J. Math. Sci. 75 (2013) 369–383.

提供可能な設備・機器：

| 名称・型番(メーカー) | |
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Special functions and integrable systems



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| Keywords | Integrable systems, Painleve equations, special solutions, theta functions | | |
| Technical Support Skills | <ul style="list-style-type: none"> • • • | | |

Research Contents

Generally, Painleve equations and their generalizations cannot be solved by special functions or algebraic functions. However, some equations of them can be solved. Such solutions are called "special solutions," which have rich mathematical structure. Our concern is with classifications or constructions of special solutions.

Recently, we have been concerned with the applications of theta functions to number theory and the derivations of new theta constant identities.

- [1]K. Matsuda, Isomonodromic deformations with an irregular singularity and the elliptic θ -function. J. Phys. A 40 (2007), no. 39, 11939–11960.
- [2]K. Matsuda, Isomonodromic deformations with an irregular singularity and hyperelliptic curves. J. Phys. A 43 (2010), no. 11, 115205, 20 pp.
- [3]K. Matsuda, Rational solutions of the Sasano system of type $A_5^{(2)}$. SIGMA Symmetry Integrability Geom. Methods Appl. 7 (2011), Paper 030, 20 pp.
- [4]K. Matsuda, Rational solutions of the Noumi and Yamada system of type $A^{(1)}_4$. J. Math. Phys. 53 (2012), no. 2, 023504, 35 pp.
- [5]K. Matsuda, Rational solutions of the Sasano system of type $D^{(2)}_3$. Kyushu J. Math. 66 (2012), no. 1, 1–20.
- [6]K. Matsuda, Mixed sums of squares and triangular numbers, Far East J. Math. Sci. 75 (2013) 369-383.

Available Facilities and Equipment

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