Painlevé systems reduced from Anti-Self-Dual Yang-Mills equations

Yoshihiro Murata*

Discussion Paper Series
(Faculty of Economics, Nagasaki University)
No.2002-05
Issued in October 2002

Abstract

In 1993, Mason and Woodhouse found that $sl(2, \mathbf{C})$ Anti-Self-Dual Yang-Mills equations defined on $\mathbf{C}^4$ can be reduced into Painlevé equations under suitable conditions of symmetry. In this paper, we reconstruct this reduction process by using the notions in the theory of Generalized Confluent Hypergeometric Functions (GCHF). We consider ASDYM equations defined on the Grassmann variety $Gr(2, 4)$, and actions of Jordan groups associated with Young diagrams of weigt 4. Through subsections in section 2 and 3, we can realize that Painlevé equations are dominated by Young diagrams of weight 4.

*Professor, Faculty of Economics, Nagasaki University