

# Painlevé Equations and Monodromy Problems: An Introduction

## Monday 11th September 2006

- 08:30–09:45 Registration
- 09:45–10:00 Opening
- 10:00–11:00 Kazuo Okamoto (Tokyo)  
*“Introduction to the Painlevé equations”*
- 11:00–11.30 Coffee
- 11:30–12:30 Hiroshi Umemura (Nagoya)  
*“Differential Galois theory and the Painlevé equations”*
- 12:30–14:00 Lunch
- 14:00–15:00 Kazuo Okamoto (Tokyo)  
*“Introduction to the Painlevé equations”* (cont.)
- 15:00–15.30 Tea
- 15:30–16:30 Nalini Joshi (Sydney)  
*“Asymptotics of Painlevé equations”*
- 16:30–17:30 Frank Nijhoff (Leeds)  
*“Discrete Painlevé equations”*
- 18:00–19:00 Wine reception and poster session

## Tuesday 12th September 2006

- 09:00–10:00 Kazuo Okamoto (Tokyo)  
*“Introduction to the Painlevé equations”* (cont.)
- 10:00–11:00 Hiroshi Umemura (Nagoya)  
*“Differential Galois theory and the Painlevé equations”* (cont.)
- 11:00–11.30 Coffee
- 11:30–12:30 Contributed talks I
- 12:30–14:00 Lunch
- 14:00–15:00 Kazuo Okamoto (Tokyo)  
*“Introduction to the Painlevé equations”* (cont.)
- 15:00–15.30 Tea
- 15:30–16:30 Nalini Joshi (Sydney)  
*“Asymptotics of Painlevé equations”* (cont.)
- 16:30–17:30 Frank Nijhoff (Leeds)  
*“Discrete Painlevé equations”* (cont.)

### Wednesday 13th September 2006

- 09:00–10:00 Thanasis Fokas (Cambridge)  
“*Riemann-Hilbert problems*”
- 10:00–11:00 Hiroshi Umemura (Nagoya)  
“*Differential Galois theory and the Painlevé equations*” (cont.)
- 11:00–11.30 Coffee
- 11:30–12:30 Contributed talks II
- 12:30–14:00 Lunch
- 14:00–15:00 Yousuke Ohyama (Osaka)  
“*Classical solutions on the Painlevé equations: from PII to PV*”
- 15:00–15.30 Tea
- 15:30–17:30 Informal discussions

### Thursday 14th September 2006

- 09:00–10:00 Thanasis Fokas (Cambridge)  
“*Riemann-Hilbert problems*” (cont.)
- 10:00–11:00 Hiroshi Umemura (Nagoya)  
“*Differential Galois theory and the Painlevé equations*” (cont.)
- 11:00–11.30 Coffee
- 11:30–12:30 Contributed talks III
- 12:30–14:00 Lunch
- 14:00–15:00 Jon Keating (Bristol)  
“*Random matrices and Painlevé equations*”
- 15:00–15.30 Tea
- 15:30–16:30 Marta Mazzocco (Manchester)  
“*Hamiltonian structure of the Painlevé equations*”
- 16:30–17:30 Philip Boalch (ENS Paris)  
“*Algebraic solutions of the Painlevé equations*”
- 19:30 Conference dinner (Hall, Magdaline College)

## Friday 15th September 2006

09:00–10:00	Yousuke Ohyama (Osaka) “Classical solutions on the Painlevé equations: from PII to PV” (cont.)
10:00–11:00	Jon Keating (Bristol) “Random matrices and Painlevé equations” (cont.)
11:00–11.30	Coffee
11:30–12:30	Contributed talks IV
12:30–14:00	Lunch
14:00–15:00	Marta Mazzocco (Manchester) “Hamiltonian structure of the Painlevé equations” (cont.)
15:00–15.30	Tea
15:30–16:30	Philip Boalch (ENS Paris) “Algebraic solutions of the Painlevé equations” (cont.)
16:30–16:45	Closing

### Contributed talks (30 minutes)

1. Guy Casale (Tokyo)  
“Local irreducibility of the first Painlevé equation”
2. Tom Claeys (Leuven)  
“A real pole-free solutions of the fourth order analogue of the Painlevé I equation and critical edge points in random matrix ensembles”
3. Maurice Duits (Leuven)  
“Painlevé I asymptotics for orthogonal polynomials with respect to a varying quartic weight”
4. Galina Filipuk (Kumamoto)  
“On the middle convolution for Fuchsian systems”
5. Stijn Lievens (Ghent)  
“Symmetry groups underlying Bailey’s transformations for  ${}^{10}\phi^9$  series”
6. Vasilios Papageorgiou (Patras)  
“Yang-Baxter maps and integrable difference equations”
7. Tomasz Stachwiak (Krakow)  
“Applications of differential Galois theory in cosmology”
8. Teruhisa Tsuda (Kobe)  
“Tropical representation of Weyl groups associated with certain rational varieties”

# Painlevé Equations and Monodromy Problems: Recent Developments

## Monday 18th September 2006

- 08:30–09:45 Registration
- 09:45–10:00 Opening
- 10:00–11:00 Alexander Bobenko (Berlin)  
*“Linear and nonlinear theories of discrete analytic functions. Integrable structure and isomonodromic Green’s function”*
- 11:00–11.30 Coffee
- 11:30–12:30 Frank Nijhoff (Leeds)  
TBA
- 12:30–14:00 Lunch
- 14:00–15:00 Hidetaka Sakai (Tokyo)  
TBA
- 15:00–15.30 Tea
- 15:30–16:30 Rod Halburd (Loughborough)  
*“Diophantine Integrability”*
- 16:30–17:30 Walter Van Assche (Leuven)  
*“Discrete Painlevé equations for recurrence coefficients of orthogonal polynomials”*
- 18:00–19:00 Wine reception and poster session

## Tuesday 19th September 2006

- 09:00–10:00 Pierre van Moerbeke (Louvain)  
*“Critical infinite-dimensional diffusions and non-linear equations for their transition probabilities”*
- 10:00–11:00 Arno Kuijlaars (Leuven)  
*“Universality of Painlevé functions in random matrix models”*
- 11:00–11.30 Coffee
- 11:30–12:30 Contributed talks I
- 12:30–14:00 Lunch
- 14:00–15:00 Ilpo Laine (Joensuu)  
*“Value distribution of solutions of Painlevé differential equations”*
- 15:00–15.30 Tea
- 15:30–16:30 Shun Shimomura (Keio)  
*A family of solutions of a degenerate Garnier system near a singularity”*
- 16:30–17:30 Katsunori Iwasaki (Kyushu)  
*“The sixth Painlevé equation: moduli spaces, singularities, and dynamical systems”*

### **Wednesday 20th September 2006**

- 09:00–10:00 Benjamin Doyon (Oxford)  
“*Solving Painlevé connection problems using 2-dimensional integrable quantum field theory*”
- 10:00–11:00 Jean-Pierre Ramis (Toulouse)  
“*Wild fundamental groups for linear differential and q-difference equations: a parallelism*”
- 11:00–11.30 Coffee
- 11:30–12:30 Contributed talks II
- 12:30–14:00 Lunch
- 14:00–17:30 Informal discussions

### **Thursday 21st September 2006**

- 09:00–10:00 John Harnad (Montreal)  
“*Isomonodromic deformation equations, R-matrix theory and duality*”
- 10:00–11:00 Peter Clarkson (Kent)  
“*Rational solutions and associated special polynomials associated for the Painlevé equations*”
- 11:00–11.30 Coffee
- 11:30–12:30 Contributed talks III
- 12:30–14:00 Lunch
- 14:00–15:00 Dimitri Korotkin (Concordia)  
“*Bergman tau-function and determinants of Laplacians in flat conical metrics over Riemann surfaces*”
- 15:00–15.30 Tea
- 15:30–16:30 Marta Mazzocco (Manchester)  
“*The Hamiltonian structure of the second Painlevé hierarchy*”
- 16:30–17:30 Nick Woodhouse (Oxford)  
“*Twistors and monodromy*”
- 19:30 Conference dinner (Old Library, Emmanuel College)

## Friday 22nd September 2006

09:00–10:00	Boris Dubrovin TBA
10:00–11:00	Bernard Mangrange <i>“Non-linear differential Galois theory”</i>
11:00–11.30	Coffee
11:30–12:30	Contributed talks IV
12:30–14:00	Lunch
14:00–15:00	Masatoshi Noumi (Kobe) <i>“Painlevé systems arising from integrable hierarchies”</i>
15:00–15.30	Tea
15:30–16:30	Alexander Veselov (Loughborough) <i>“Monodromy-free Schrödinger equations and Painlevé transcendents”</i>
16:30–16:45	Closing

### Contributed talks (30 minutes)

1. Misha Feigin (Glasgow)  
*“Degenerate Gaussian Unitary ensembles and Painlevé IV”*
2. Saburo Kakei (Tokyo)  
*“From the KP hierarchy to the Painlevé equations”*
3. Hironobu Kimura (Kumamoto)  
*“Degeneration and symmetry of the Schlesinger system from the point of view of Twistor theory”*
4. Christian Klein (Leipzig)  
*“Dissipationless shocks and Painlevé equations”*
5. Risto Korhonen (Joensuu)  
*“Finite order meromorphic solutions and the discrete Painlevé equations”*
6. Yoshihiro Murata (Nagasaki)  
*“On matrix Painlevé equations”*
7. Vasilisa Shramchenko (Oxford)  
*“Riemann-Hilbert problems associated with Hurwitz Frobenius manifolds”*
8. Mo Man Yue (Montreal)  
*“The Riemann-Hilbert approach to the asymptotics of isomonodromic problems”*