

WORKSHOP ON PHYSICS AND COMPUTATION UNCONVENTIONAL COMPUTATION 2008

Parkhotel Schönbrunn, Vienna, August 25-28, 2008

Organised by

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Centro de Matemática e Aplicações Fundamentais

Complexo Interdisciplinar

Universidade de Lisboa

Lisboa, Portugal

Centro de Filosofia das Ciências da Universidade de Lisboa

Faculdade de Ciências

Lisboa, Portugal

Programme

1 Monday 25, morning session

- 11h00 – 11h50 Kumaraswamy VELUPILLAI
UNCOMPUTABILITY AND UNDECIDABILITY IN ECONOMIC THEORY

2 Monday 25, afternoon

CHAIRMAN CRISTIAN CALUDE

- 14h00 – 14h10 José Félix COSTA
FOREWORD
- 14h10 – 14h50 Andrew ADAMATZKY
FROM REACTION-DIFFUSION TO PHYSARUM COMPUTING
- 14h50 – 15h30 Jerzy GÓRECKI
INFORMATION PROCESSING WITH STRUCTURED EXCITABLE MEDIUM
- 16h00 – 16h40 John V. TUCKER
COMPUTATIONS VIA NEWTONIAN AND RELATIVISTIC KINEMATIC SYSTEMS
- 16h40 – 17h20 Martin ZIEGLER
PHYSICALLY-RELATIVIZED CHURCH-TURING HYPOTHESES

3 Tuesday 26, afternoon

CHAIRMAN ANDREW ADAMATZKY

- 14h00 – 14h40 Olivier BOURNEZ
ON THE CONVERGENCE OF A POPULATION PROTOCOL WHEN POPULATION GOES TO INFINITY
- 14h40 – 15h20 S. Barry COOPER
EMERGENCE AS A COMPUTABILITY-THEORETIC PHENOMENON
- 15h20 – 16h00 Jean-Charles DELVENNE
WHAT IS A UNIVERSAL COMPUTING MACHINE?
- 16h30 – 17h10 Daniel GRAÇA
COMPUTATIONAL BOUNDS ON POLYNOMIAL DIFFERENTIAL EQUATIONS
- 17h10 – 17h50 Jeffery ZUCKER
THE SEMANTICS OF CLASSICAL PHYSICAL NETWORKS: A STUDY OF SYNCHRONOUS CONCURRENT ALGORITHMS

4 Wednesday 27, afternoon

CHAIRMAN FRANCISCO DÓRIA

- 14h00 – 14h40 István NÉMETI & Hajnal ANDRÉKA
GENERAL RELATIVISTIC HYPERCOMPUTING AND FOUNDATION OF MATHEMATICS

- 14h40 – 15h20 Mark HOGARTH
A NEW PROBLEM FOR RULE FOLLOWING
- 15h20 – 16h00 Jérôme DURAND–LOSE
BLACK HOLE COMPUTATION: IMPLEMENTATION WITH SIGNAL MACHINES
- 16h30 – 17h10 Damien WOODS
OPTICAL COMPUTING

5 Thursday 28, morning session

- 9h00 – 9h50 Āaslav BRUKNER
HOW QUANTUM MECHANICAL EXPERIMENTS CAN TEST THE (UN)DECIDABILITY OF MATHEMATICAL STATEMENTS?

6 Thursday 28, afternoon

CHAIRMAN MARK HOGARTH

- 14h00 – 14h40 Udi BOKER
THE INFLUENCE OF THE DOMAIN INTERPRETATION ON COMPUTATIONAL MODELS
- 14h40 – 15h20 Francisco Ant3nio DORIA
HOW TO BUILD A HYPERCOMPUTER
- 15h20 – 16h00 Mike STANNETT
COMPUTABLE, UNCOMPUTABLE, NEITHER OR BOTH? — A FINITARY COMPUTATIONAL FORMULATION OF QUANTUM THEORY
- 16h30 – 17h10 Karl SVOZIL
ON THE SOLUTION OF TRIVALENT DECISION PROBLEMS BY QUANTUM STATE IDENTIFICATION

CHAIRMAN BARRY COOPER

- 17h10 – 17h50 GENERAL DISCUSSION