

Centre for Interdisciplinary Research in
Computational Algebra



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Showcase and Invitation
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CIRCA

- Interdisciplinary Research Centre licensed by the University in 2000
 - When Maths & CS split into separate Schools
- Support a growing range of projects that include some aspects of algebra and computation, both broadly interpreted.
 - You will hear about some of them today
- At last count, CIRCA includes roughly
 - 13 academic staff
 - 2 emeritus staff
 - 7 research staff
 - 2 support staff
 - 21 PhD students
- Deliberately a little fuzzy at the edges
- £3m+ grant income.

EPSRC Feasibility Accounts

- EPSRC (Engineering & Physical Sciences Research Council) recently launched a most unusual call for proposals
 - Open to groups who already have major interdisciplinary funding
 - Offers about 20 grants of up to £250K to support
 - “a suite of highly adventurous, speculative feasibility studies that have the potential to consolidate the cross-disciplinary culture within the institution”
 - Money must be spent by April 2011 – no extensions.
 - Possibility of “substantial” follow-on funds
- Second stage application due by mid July.

CIRCA Feasibility Account Plan

- New dimensions in existing collaboration
- New collaborations and applications
- 18 month project – October '09 to April '11
 - 3 rounds of activities
 - Event like this (except at more notice) at the end of each round to
 - Report results
 - Solicit (short, simple) proposals for the next round
 - Small committee will select activities
 - University (VP research) offered to fund this first event before we put in the final application – hence the short notice
 - Demonstrates University support
 - Enables us to be specific about first round activities.
 - Makes interesting connections even if we're not funded

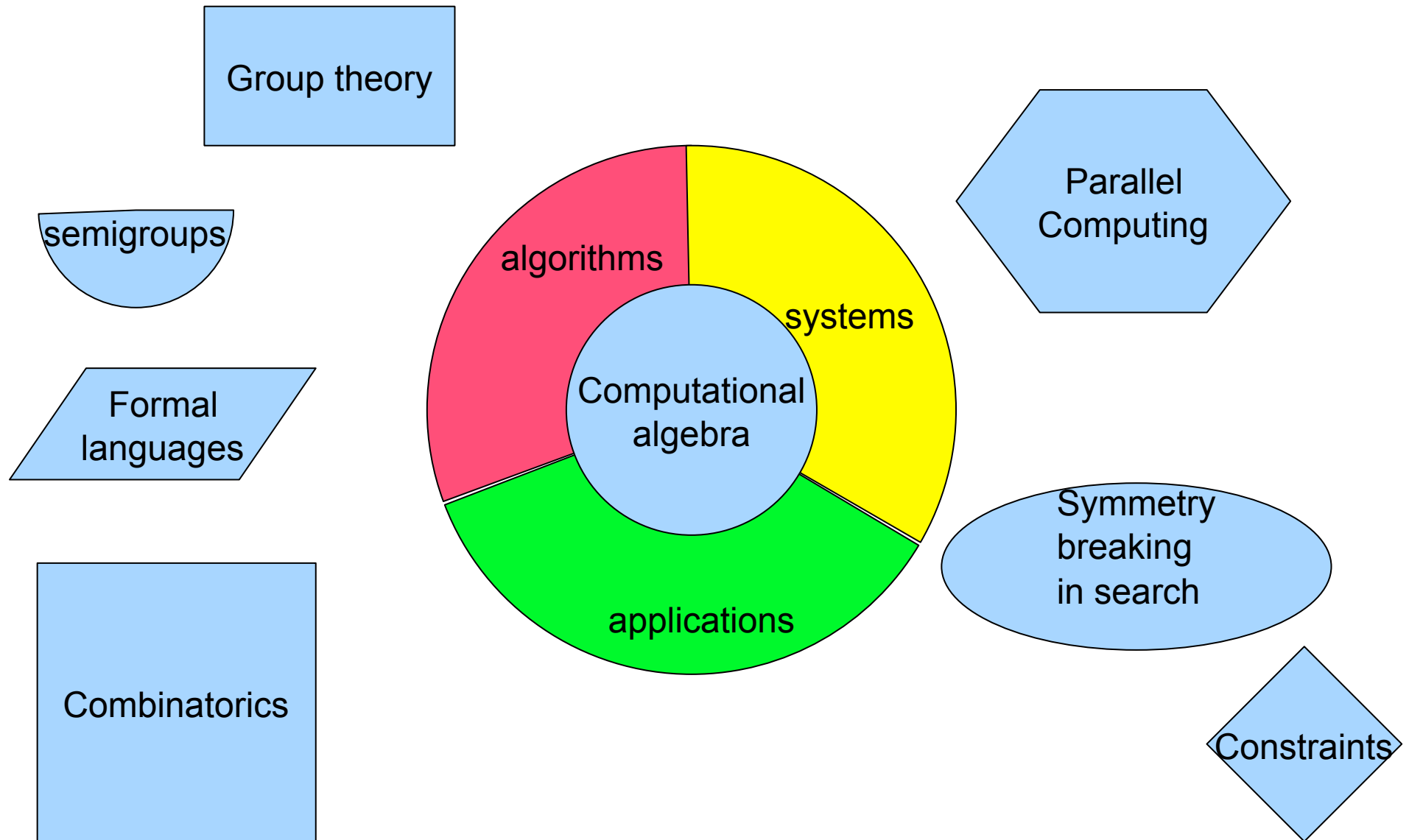
Plan for Today

- Tell you (and each other) about
 - Some of our research areas
 - Some recent projects
- More material on the posters
- Hear about your research interests
- Discuss possible/interesting collaborations
- Encourage ideas for first round activities to include in the feasibility account proposal
- Encourage you to spread the word further.

CIRCA Research Areas

- Abstract algebra
- Combinatorics
- Formal languages and automata
- Computational algebra
 - Algorithms
 - Systems
 - Applications
- General symbolic computation
- Constraint Programming
- Parallel Computing

Some CIRCA research Areas



CIRCA Research Areas – Computational Algebra

Computational Algebra = Algebra + Algorithms

- Algebra is the mathematics of symmetries, transformations and structure
- Algebra provides theoretical tools to Computer Science, Physics, Chemistry, ...
.... which in turn provide new problems and insights for algebra
- We add computation to this interaction
 - developing new algorithms for solving algebraic problems
 - exploring new algebraic problems motivated by computation
 - designing software systems for algebraic computation
 - applying computational algebra to problems in many disciplines

