



GReGAS

**Project Presentation**  
**<http://www.gregas.eu>**

Paris, June 12, 2011

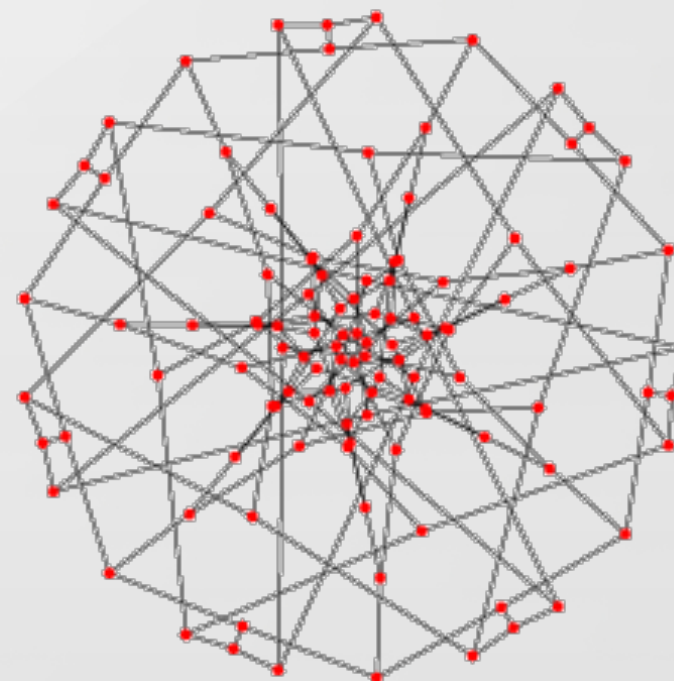


# About GReGAS

- **GReGAS** - Geometric representations and symmetries of graphs, maps and other discrete structures and applications in science
- **Project Leader:** Tomaž Pisanski, Slovenia
- **PI Countries:** Croatia, Germany, Slovakia, Slovenia, Turkey
- **AP Countries:** Austria, Belgium, New Zealand, Israel, USA, UK
- **5 Themes**

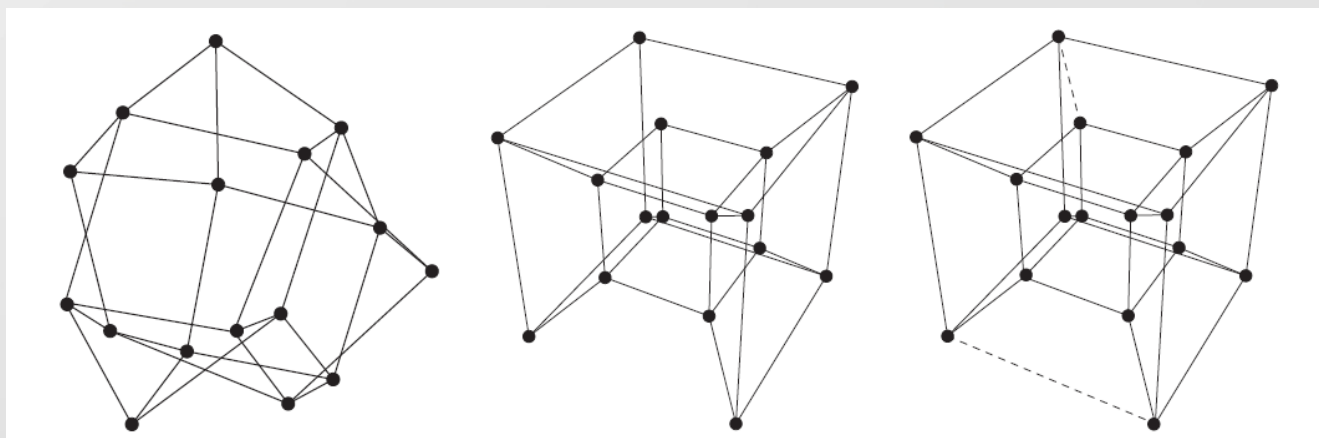
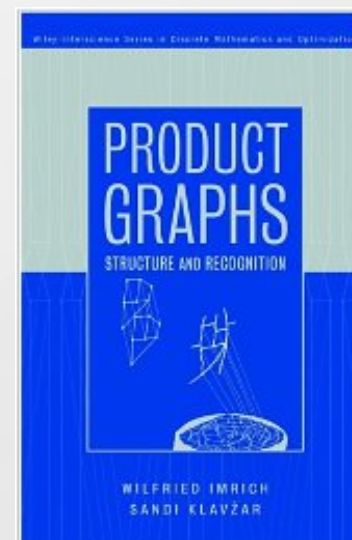
# Theme 1

- Representations and structure of graphs and other discrete structures
  - Coherent representation theory
    - graphs
    - maps
    - polytopes
    - configurations
    - ...



## Theme 2

- Near symmetric structures or products
  - Graph products
  - Recognition of product-like structures

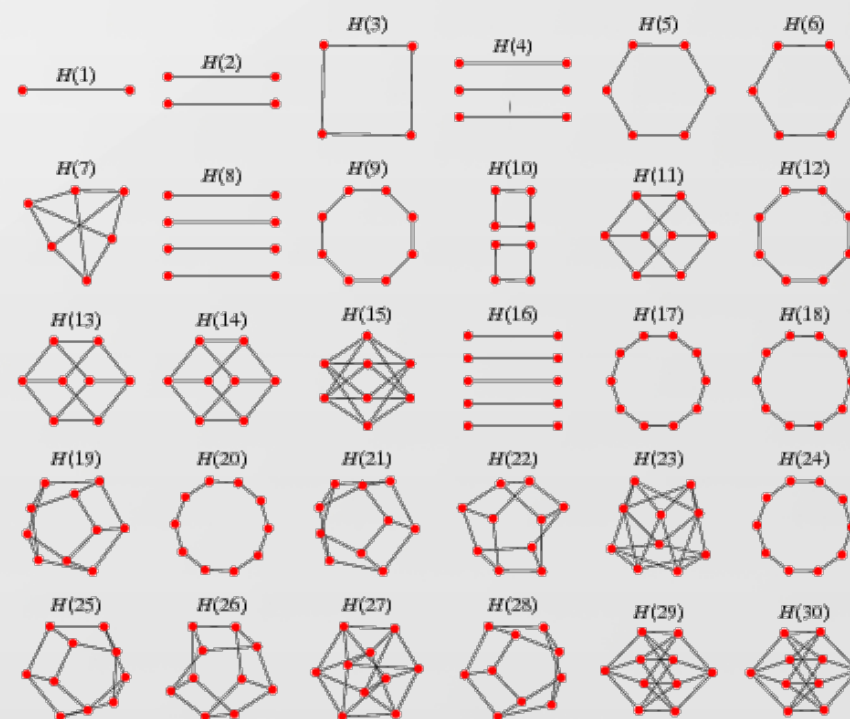


## Theme 3

- Representations of symmetric graphs
  - Symmetries
  - Algebraic graph theory

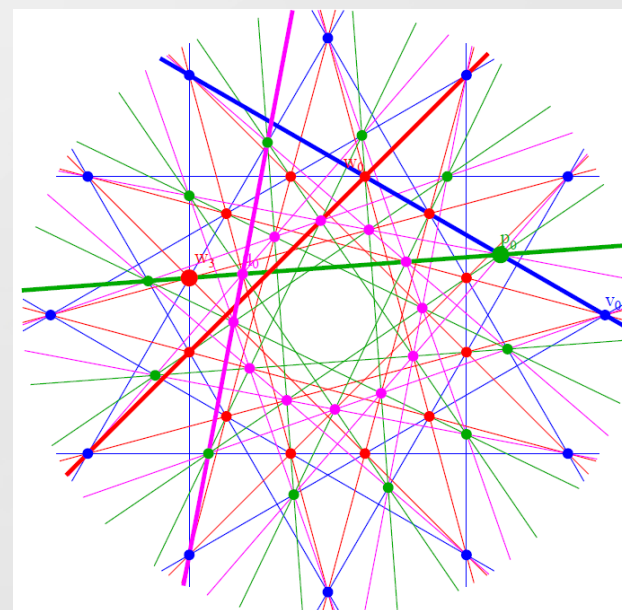
### References:

- Sloane: The On-Line Encyclopedia of Integer Sequences™ (OEIS™)
- Wolfram Mathworld – Haar graph, I-graph



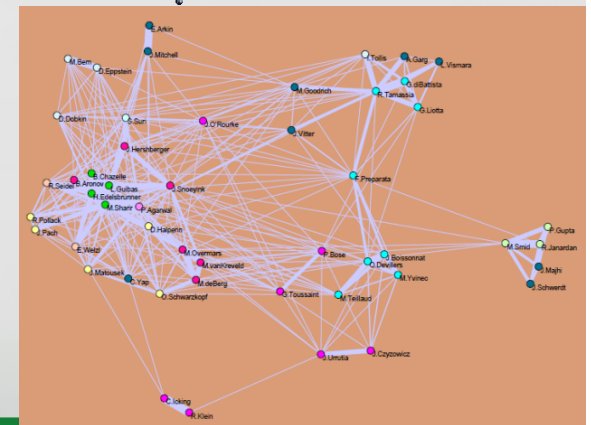
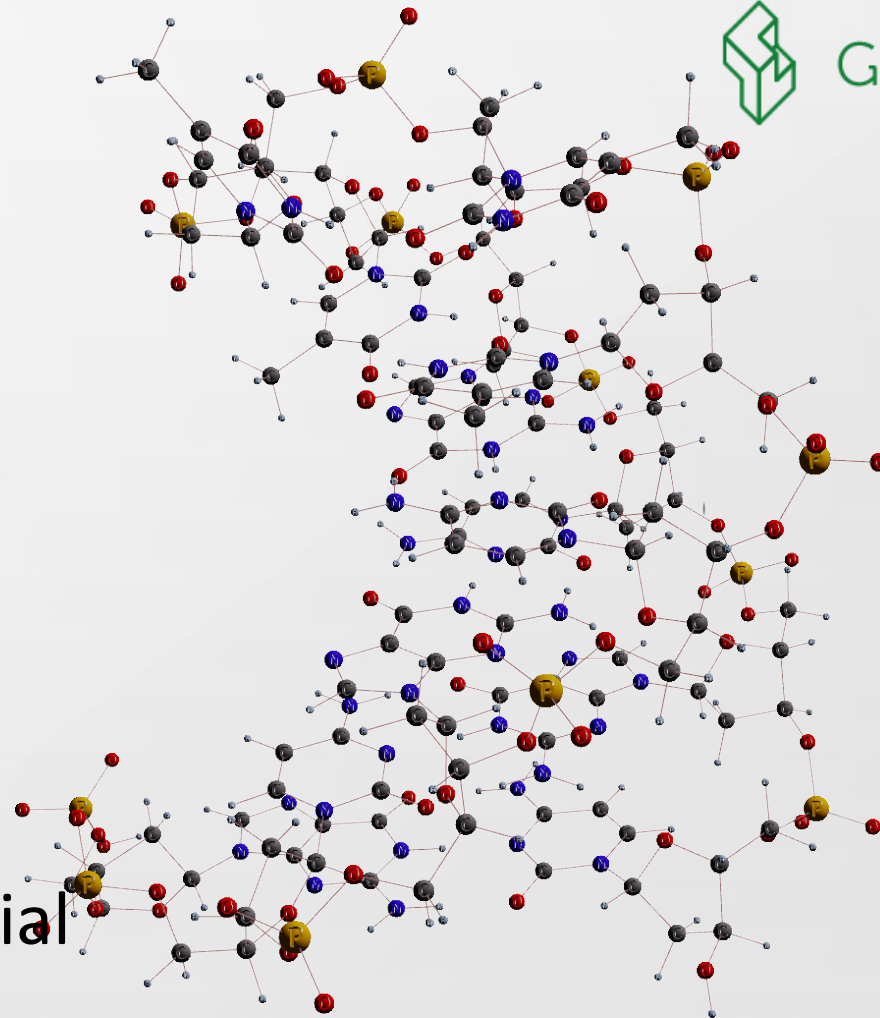
## Theme 4

- Representations of configurations, maps and polytopes
  - Censuses
  - Characterizations
  - Incidence geometries



## Theme 5

- Representations of large networks and applications in mathematical chemistry, bioinformatics, humanities and social networks
  - Pajek





## Principal Investigators

- Vladimir Batagelj, SLO
- Turker Biyikoglu, TUR
- Sandi Klavžar, SLO
- Antoaneta Klobučar, CRO
- Dragan Marušič, SLO
- Martin Škoviera, SK
- Peter F. Stadler, GER





## Associated Partners

- Leah Wrenn Berman, USA
- Marston D. E. Conder, NZ
- Patrick Fowler, UK
- Wilfried Imrich, AUT
- Mikhail Klin, IL
- Dimitri Leemans, BE
- Josef Leydold, AUT
- Egon Schulte, USA

# Community

- Bled conference – Slovenia (year mod 4 = 3)
- GEMS workshop – Slovakia (year mod 4 = 1)
- SIGMAP – Portugal, USA, Mexico (year mod 4 = 2)
- Combinatorics workshop – New Zealand (year mod 4 = 0)
- Ljubljana-Leoben seminar (every year)
- Math/Chem/Comp – Croatia, Dubrovnik (every year)
- Algebraic Graph Theory Summer School 2011
- Computers in Scientific Discovery (CSD)

# Anticipated Results

- Coherent Representation Theory
- Annual Research Reports
- Scientific Papers
  - Special issues (Ars Mathematica Contemporanea)
- Scientific software (Pajek, Vega, Magma)
- Networking Synergy
- Applications
  - Data Analysis
- Events
  - Meetings, Visits
  - Workshops

## Next Meetings

- GReGAS kick-off meeting at Bled, June 19-25 2011, Slovenia (Dragan Marušič)
- Mathematics & Art, June 27, Ljubljana, Slovenia (Tomaž Pisanski)
- Summer School in Algebraic Graph Theory, June 27 – July 2 2011, Rogla, Slovenija (Dragan Marušič)
- Symmetries of Discrete Objects, Queenstown, February 13-17, 2012, New Zealand (Marston Conder)
- Computers in Scientific Discovery 6, 2012, Slovenia (Tomaž Pisanski, Klavdija Kutnar)

# Participating Organizations



# Current Information

<http://www.gregas.eu>