

# International Journal of Computational Geometry and Applications

Call for Papers

Special Issue on Geometric Constraints

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Geometric Constraints Solvers are today a key component of all geometric modelers. Geometric constraints occur for dimensioning and tolerancing mechanical parts in CAD-CAM, for modeling curves, surfaces and blends, for conception of mechanisms, for finding the configurations of robots in robotics or of molecules in chemistry. New applications of constraints modeling will likely arise.

In recent years, research on geometry constraint solving is quite active. Besides many reports in large scale conferences, geometry constraint solving is one of the main themes of several specialized workshops including the ISICAD workshop held in Russia in June 2004, the ADG workshop held in USA in September 2004, and the Workshop on Geometric Constraint Solving held in China in October 2003. We feel that it is time to publish a special issue devoted to this important topic.

Thus IJCGA is devoting a special issue to the subject of geometric constraints. Authors should note the benefits of publication in a special issue - a collection of high-quality related papers in one volume, with expedited handling of the review and revision of accepted papers. The journal has committed to giving priority in the publication queue for the special issue.

Manuscripts are solicited on topics to include:

- resolution of geometric constraints, with computer algebra, numerical analysis, interval analysis, logical approaches
- decomposition of systems of geometric constraints
- mixing geometric and non geometric constraints, white boxes, black boxes, geometric constraints and constraints processing
- detection of dependence between constraints, debugging geometric constraints
- constrained curves, surfaces, blends
- exotic (eg non cartesian) formulations of constraints
- comparison of resolution methods or constraints formulations for the same problems
- mathematical background: combinatorial rigidity, graph theory, matroid theory, computer algebra (polynomial systems)
- detailed applications, in Computer Graphics, CAD-CAM, robotics, mechanism design, chemistry (eg molecule configuration)
- sensitivity to value parameters, and other robustness issues
- choice of the "good" solution
- dynamic geometry
- computer-human interfaces for geometric constraints
- geometric constraints and data exchange
- topological constraints, eg optimal curves or surfaces with prescribed topology (homology, homotopy, isotopy)
- shape optimization
- geometric constraints and geometric representations (boundary representation, constructive solid geometry, features)
- integration of geometric solvers into modelers
- solvers architecture
- geometric solver industrial/market solutions.

Authors should send their submission as a file attachment in pdf or postscript format to both guests editor by June 12, 2005. While submissions may be in any standard format, accepted papers will need to be prepared using latex, following the journal guidelines available at [www.worldscinet.com/journals/ijcga/mkt/guidelines.shtml](http://www.worldscinet.com/journals/ijcga/mkt/guidelines.shtml) and [www.worldscinet.com/authors/stylefiles.shtml](http://www.worldscinet.com/authors/stylefiles.shtml).

Authors are encouraged to submit as early as possible. All manuscripts will be promptly and carefully refereed.