

Robust Geometric Computing

(in German: Robust Geometric Computing -)

Module-ID: FIN-INF-102216

Link:	LSF
Responsibility:	Prof. Dr. Stefan Schirra
Lecturer:	Prof. Dr. Stefan Schirra
Classes:	• Lecture Robust Geometric Computing • Exercises Robust Geometric Computing
Applicability in curriculum:	

Abbreviation	Credit Points	Semester	Term	Duration	Language	Level
RGC	6	Winter	ab 1.	1 Semester	english	Master

Intended learning outcomes:

Students understand robustness and numerical precision issues in the implementation of geometric algorithms and know methods how to deal with these problems, for example, by exact decisions or verified geometric computing

Content:

- basics of floating-point arithmetic
- error analysis
- floating-point filters and interval arithmetic
- software number types with arbitrary precision
- geometric filters
- computing with algebraic numbers

Workload:

Präsenzzeiten: 3 SWS Vorlesung 1 SWS Frontalübungen und praktische Übungen Selbstständige Arbeit: Bearbeiten der Übungen und Nachbereitung der Vorlesungen 180h = 4 SWS = 56h
Präsenzzeit + 124h selbstständige Arbeit

Type of examination:	Teaching method / lecture hours per week (SWS):
participation in the implementation project oral exam	Lecture (3 SWS) Exercises (1 SWS)

Prerequisites according to examination regulations:	Recommended prerequisites:
keine	C++ programming language

Media:	Literature:
	Boissonnat (Ed.); Effective Computational Geometry Mehlhorn, Yap; Robust Geometric Computation (draft)

Comments:

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