



SERGUEI SOLOVYEV

*From France to Sweden*



Project: **Asymmetry in Semantic Games**

Research topic: **Informatics**

Swedish Institution: **Chalmers University of Technology**

French Institution: **Institut de Recherche en Informatique de Toulouse (IRIT),  
University of Toulouse 3 Paul Sabatier**

Dates of mobility: **29/10/2023** to **05/11/2023**

Program: **SFVE-A**



## PRESENTATION

Serguei Solovyev (alias [Sergei Soloviev](#)), is professor at [IRIT, University of Toulouse 3 Paul Sabatier](#) since 1998. He is known by his research in proof theory and its applications in mathematics and informatics. Collaboration with [Chalmers University](#) concerns mostly game-theoretic semantics and theory of types with applications to verification and certification of computer programs. He obtained his PhD in mathematics from [the Steklov Mathematical Institute](#) (USSR, 1984) and Habilitation à Diriger des Recherches in Informatics from [the University Paris 7](#) (1994).

## ACTIVITIES IN SWEDEN

Main purpose of the visit was to discuss with [prof. Thierry Coquand](#) at Chalmers the problems of Game Semantics due to asymmetry of players (Verifier and Falsifier). Prof. T. Coquand is author of several research papers where he considered so called “games with backward moves” that have an important role in Game Semantics. S. Solovyev proved some theorems and obtained examples that in case of difference in computational power between Verifier and Falsifier the semantics can be “perverted”: Verifier may have winning strategies for false formulas. This fact must be taken into account when the methods of interactive verification of programs based on game semantics are developed. It has consequences also for foundational research, in particular possible models of so called “axiom of determinacy” in Set Theory. During the visit (1.11) S. Solovyev gave the talk: “[The Verifier-Falsifier Games with Restrictions on Computational Complexity of Strategies \(updated\)](#)” at research seminar of [Computer Science Department of Chalmers University](#). The talk was partly based on earlier talk (Stockholm, 2022) but contained two principally new fundamental examples and a generalization of the main theorem.