Cycle 30th
ORAL DEFENCE OF THE PHD THESIS

Mercoledì 24 gennaio ore 15.30
(Aula Seminari “-1” di Matematica)

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Choice, extension, conservation.
From transfinite to finite proof methods in abstract algebra

Abstract:
Maximality principles such as the ones going back to Kuratowski and Zorn ensure the existence of ideal objects the use of which is commonly held indispensable for mathematical practice. However, the modern turn towards computational methods, which can be witnessed to have a strong influence on contemporary foundational studies, encourages a reassessment within a constructive framework of the methodological intricacies that go along with invocations of such principles.

In this talk we will walk on the tracks of a revised Hilbert programme that has inspired a reapproach to abstract algebra by finitary means, and for which Scott’s entailment relations have shown to provide a vital and utmost versatile tool. This reapproach will be illustrated by way of a paradigmatic example: Sikorski’s extension theorem, which identifies the injective objects in the category of distributive lattices. Specific forms of Sikorski’s theorem can be rephrased in terms of conservation results in such a way as to allow for a constructive proof. We will further indicate how to bring the notion of Jacobson radical from commutative rings to a general ideal theory for single-conclusion entailment relations, and discuss applications. Last but not least, it will be commented on possible directions for future developments.

Relatore:
Peter Schuster