



# WEIL CONJECTURES

IM PAN, Śniadeckich 8, Room 403.

**Organizers: Piotr Achinger and Przemysław Chojecki.**

The goal of the seminar is to motivate Weil conjectures and show some applications of them.

## 31st May 2012:

**Piotr Achinger 10.15-11.45:** Zeta function of a scheme. Proof of the Weil conjectures for elliptic curves. Sketch of a proof for curves. Statement of the Weil conjectures.

**Jakub Byszewski 12.00-13.30:** Lefschetz trace formula in étale cohomology. How the existence of good cohomology theory implies Weil conjectures (besides Riemann hypothesis).

**Bartosz Naskręcki 14.45-16.15:** Applications of Weil conjectures. K3 surfaces.

## 1st June 2012:

**Przemysław Chojecki 10.15-11.45:** General description of the content of Weil I and Weil II, proof of how Weil II implies Weil I. Brief sketch of the strategy of proof of Weil II.

**Bartosz Naskręcki 12.00-13.30:** l-adic sheaves, l-adic cohomology, weights and the target theorem.

**Jakub Byszewski 14.45-16.15 (Room 321):** The Artin-Schreier sheaf and the purity theorem. Reduction of the target theorem to the purity theorem.

## 2nd June 2012:

**Piotr Achinger 10.15-11.45:** Reduction of the purity theorem to the monodromy theorem.

**Piotr Achinger 12.00-13.30:** Proof of the monodromy theorem. Some applications of Weil II.

**Przemysław Chojecki 14.45-16.15:** Analogues of Weil II in characteristic 0, Deligne's weight-monodromy conjecture and perfectoid spaces.

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<http://www.math.jussieu.fr/~chojecki/weil.html>