

College seminar

Moduli space of algebraic curves

Organized by: B. Farang-Hariri

Supervised by: Prof. J. Kramer

Time and place: 13:15–2:45 on Wednesdays in room 1.023

Organization of the talks

The Topic of the Winter semester of the College Seminar is MODULI SPACE OF ALGEBRAIC CURVES. We will be working on the book GEOMETRY OF ALGEBRAIC CURVES, VOLUME II of ARBARELLO-CORNALBA-GRIFFITHS. There will be 15 talks organized in the semester starting by three first talks on Hilbert schemes corresponding to §2-9 of Chapter IX of [1]. Then we will have talks 4, 5 and 6 on nodal and stable curves followed by the important result on stable reduction corresponding to Chapter X §2-8. We continue in talk 7 by an introduction to deformation theory according to Chapter XI §2-4 followed by talk 8 on the construction of Kuranishi families Chapter X §5-6. In talk 9, we will talk about the period map and local Torelli theorem according to Chapter X §8. In talk 10, we will start by studying the moduli of stable curves then in talk 11 we will take a look at the orbifold structure followed by talk 12 and 13 by the descent theorem and Deligne-Mumford stack. At the end in talk 14 and 15 we will finish with the geometric invariant theory point of view and the projectivity of the moduli space of curves.

Talk 1 – 16/10/2013 **Hilbert schemes I: Chapter IX; §1,2,3**
DAVID OUWEHAND

Talk 2– 23/10/2013 **Hilbert schemes II: Chapter IX; §4,5,6**
FABIAN MÜLLER

Talk 3 – 30/10/2013 **Hilbert schemes III: Chapter IX; §7,8,9**
MAX BENDER

Talk 4– 06/11/2013 **Nodal curves, stable curves: Chapter X; §2, 3**
ROSTISLAV DEVYATOV

Talk 5– 13/11/2013 **Stable reduction (proof and examples): Chapter X; §4**
GIULIA BATTISTON

- Talk 6** – 20/11/2013 **Contraction, projection, stabilization: Chapter X; §6,7,8**
IRENE SCHWARZ
- Talk 7** – 27/11/2013 **Deformation theory: Chapter XI; §2,3,4**
IRFAN KADIKÖYLÜ
- Talk 8** – 04/12/2013 **Kuranishi Families: Chapter XI; §5,6**
ANA MARIA BOTERO
- Talk 9** – 11/12/2013 **The period map and local Torelli thm (with proof): Chapter XI; §8**
NICOLAS SCHMIDT
- Talk 10**– 18/12/2013 **Moduli space of stable curves: Chapter XI; §2,3**
INDER KAUR
- Talk 11** – 08/01/2014 **Moduli space of curves as an Orbifold: Chapter XI; §4,5**
GIOVANNI DE GAETANO
- Talk 12**– 15/01/2014 **Descent theory of QC-sheaves and stacks: Chapter XI; §6,7**
GREGOR BRUNS
- Talk 13** – 22/01/2014 **Deligne-Mumford stacks: Chapter XI; §8,9**
NIELS LINDNER
- Talk 14**– 29/01/2014 **Invariant theory: Chapter XIV; §2,3**
EMRE SARTOZ
- Talk 15** – 05/02/2014 **Projectivity of moduli of curves: Chapter XIV; §4,5**
FRANK GOUNELAS

References

- [1] Arbarello, E. and Cornalba, M. and Griffiths, P- Geometry of algebraic curves. Volume II Springer 2011
- [2] Harris, J. and Morrison, I. Moduli of curves Springer-Verlag 1998