

Topics in Symplectic Dynamics

Hauptseminar

Prof. Peter Albers

HOLOMORPHIC CURVES IN LOW DIMENSIONS

Plan of the seminar

All the numbers refer to the book [1].

A. Symplectic four-manifolds containing embedded symplectic spheres

24.4.2019 – Gabriele Benedetti (Chapter 1): Introduction to the seminar. We gave some motivation for Part A and explain the strategy of proof.

8.5.2019 – Lucas Dahinden (Chapter 3): Symplectic blow-up and Lefschetz fibrations

15.5.2019 – Johanna Bimmermann (Chapter 2.1.1 – 2.1.4): Moduli spaces of holomorphic curves and their dimensions

22.5.2019 – Arnaud Maret (Chapter 2.1.6 – 2.1.8): Compactness, gluing and orientation of the moduli spaces

29.5.2019 – Anna-Maria Vocke (Chapter 2.2): Special features of symplectic manifolds of dimension 4

5.6.2019 – ?? (Chapter 4.1 – 4.2): Compactness for embedded holomorphic spheres in dimension 4 (Statement)

12.6.2019 – ?? (Chapter 4.3 – 4.3): Compactness for embedded holomorphic spheres in dimension 4 (Proof)

19.6.2019 – ?? (Chapter 5): Exceptional spheres and the proof of Theorems B and C

26.6.2019 – ?? (Chapter 6): Proof of Main Theorem via Theorems F,G,A,D,E.

B. *Symplectic four-manifolds containing immersed symplectic spheres*

3.7.2019 – Michael Bleher (Chapter 7.1 & 7.3.1): Introduction to the problem and outline of the proof of (2) \Rightarrow (1) in Theorem 7.3 using Seiberg-Witten

10.7.2019 – ?? (Chapter 7.3.2 – 7.3.5): Proof of Theorem 7.34

17.7.2019 – Levin Maier (Chapter 7.2): Gromov–Witten invariants

24.7.2019 – ?? (Chapter 7.6 – 7.7) Topology of uniruled surfaces and conclusion of the proof

References

- [1] C. Wendl, *Holomorphic curves in low dimensions. From symplectic ruled surfaces to planar contact manifolds*, Lecture Notes in Mathematics, vol. 2216, Springer, Cham, 2018.