

FLOER HOMOTOPY THEORY SEMINAR

PLAN OF THE TALKS

DISCUSSION (15/04). – Thibaut Mazuir & Chris Wendl

TALK 1: Introduction to spectra (29/04). – Ruochong Huang

TALK 2: Morse theory and classifying spaces (06/05). – Apratim Choudhury

(i) Quick recollections on Morse theory and the Morse-Smale assumption

Section 1 of [CJS70]

(ii) Gluing for moduli spaces of broken Morse trajectories

Sections 2 and 5 of [CJS70]

(iii) Definition of the flow category \mathcal{C}_f and of the classifying space of a topological category

Sections 1 and 3 of [CJS70], see also [Seg68] if necessary

(iv) Idea of proof of the two parts of the main theorem of [CJS70]

Sections 3 and 6 of [CJS70], see also [Cal] if necessary

(v) Relationship with the Morse complex

Section 4 of [CJS70]

(vi) Compare these results to the main theorem of [Fra79]

TALK 3: The Floer homotopy type of the cotangent bundle (13/05). – Thibaut Mazuir

Selected pieces of [Coh10]

TALK 4: (27/05). –

TALK 5: (03/06). –

TALK 6: (10/06). –

TALK 7: (17/06). –

TALK 8: Classical bordism theory (24/06). – Ruochong Huang

TALK 9: Bordism theory of flow categories (01/07). – Apratim Choudhury

[Hir] - and maybe selected pieces of [PS24] in this talk or in Talk 10

TALK 10: (08/07). –

TALK 11: (15/07). –

REFERENCES

- [Cal] Maxine Ella Calle. Morse Theory and Flow Categories. Dissertation available at <https://bpb-us-w2.wpmucdn.com/web.sas.upenn.edu/dist/0/713/files/2020/07/CalleReedThesis.pdf>.
- [CJS70] Ralph L. Cohen, John D.S. Jones, and Graeme B. Segal. Morse Theory and Classifying spaces, 1970.
- [Coh10] Ralph L. Cohen. The Floer homotopy type of the cotangent bundle. *Pure Appl. Math. Q.*, 6(2):391–438, 2010.
- [Fra79] John M. Franks. Morse-Smale flows and homotopy theory. *Topology*, 18:199–215, 1979.
- [Hir] Amanda Hirschi. Floer Homotopy Theory. Notes for the Séminaire de Mathématiques Supérieures 2022 available at https://amandahirschi.com/?page_id=184.
- [PS24] Noah Porcelli and Ivan Smith. Bordism of flow modules and exact lagrangians, 2024. arXiv:2401.11766.
- [Seg68] Graeme Segal. Classifying spaces and spectral sequences. *Publ. Math., Inst. Hautes Étud. Sci.*, 34:105–112, 1968.