

SELF-DUAL EQUATIONS ON RIEMANN SURFACE

ABSTRACT. In this seminar, we are trying to learn basic topics on Higgs bundles, and mainly focus on the relations between Hermitian-Yang-Mills equation and slope stability. The main reference is Hitchin's celebrated paper [[Hit87](#)].

0. SCHEDULE

0.1. **Talk 1: Preliminaries on differential geometry (Qiliang Luo 02/27).**

- Principal bundle;
- Connection, curvature of principal bundle.

0.2. **Talk 2: Self-dual equations (Qiliang Luo 03/06).**

- The definition of self-dual equations on principal bundle;
- The existence of solution to self-dual equation implies the stability.

0.3. **Talk 3: Stability of rank two Higgs bundles (Bowen Liu).**

- Rank two stable Higgs bundles over projective line and elliptic curve;
- Rank two stable Higgs bundles over curves of general type;
- Endomorphism of stable Higgs bundles;

0.4. **Talk 4: An existence theorem.**

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REFERENCES

- [Hit87] N. J. Hitchin. The self-duality equations on a Riemann surface. *Proc. London Math. Soc. (3)*, 55(1):59–126, 1987.