READING SEMINAR - SYMPLECTIC REDUCTION IN INFINITE DIMENSION

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Time and place

The reading seminar will happen on January 5-7 2021, from 14:00 to 17:00, and more if we hit it off. It is an online seminar.

Description

The goal is to learn about symplectic reduction of infinite dimensional symplectic manifolds. One instance of such a reduction appeared in the work of Atiyah-Bott on the Yang-Mills equation. There, they considered the gauge group action on the space of connections on a given vector bundle. The moment map is the curvature. The symplectic quotient is finite dimensional and isomorphic to some character variety. Other examples include actions on the group of (volume-preserving) diffeomorphisms and the group of symplectomorphisms. We are planning to read [DiRa]. This looks pretty well-written. Further readings may include [Do] and [Tum].

References

[DiRa] Diez, T.; Ratiu, T. Group-valued momentum maps for actions of automorphism groups, https://arxiv.org/pdf/2002.01273.pdf.

[Do] Donaldson, S.K. Moments map in differential geometry, https://www.intlpress.com/site/pub/files/_fulltext/journals/sdg/2003/0008/0001/SDG-2003-0008-0001-a006.pdf.

[Tum] Tumpach, B. Variétés kählériennes et hyperkählériennes de dimension infinie, http://math.univ-lille1.fr/~tumpach/Site/research_files/theseX.pdf.