Mathematisches Institut
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June 29th 2015

Symplectic Geometry – Homework 11

Due on July 6th 2015, in class

Exercise 1.

Make Homework 10 on page 82 of Lectures on Symplectic Geometry by Ana Cannas da Silva.

Exercise 2.

- Check that, given $\omega = \frac{i}{2}\sum_{j,k}^{n} h_{jk}\, dz_j \wedge d\overline{z}_k$, one has

$$\omega^n = n! \left(\frac{i}{2}\right)^n \det(h_{jk})\, dz_1 \wedge d\overline{z}_1 \wedge \cdots \wedge dz_n \wedge d\overline{z}_n$$

- Find an expression in coordinates for the 2-tensor $\omega(\cdot, J\cdot)$ in terms of the matrix (h_{jk}). Conclude that $\omega(\cdot, J\cdot) > 0$ if and only if the matrix (h_{jk}) is positive definite.