

VIRTUAL EAST-WEST SCV SEMINAR

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Friedrich HASLINGER
Universität Wien

THE ∂ -OPERATOR AND REAL HOLOMORPHIC VECTOR FIELDS

We study spectral properties of the ∂ -operator and its dual ∂^* on the Segal-Bargmann (Fock) space. We consider the corresponding ∂ -complex and the complex Laplacian $\tilde{\square} = \partial^*\partial + \partial\partial^*$. In addition, we discuss the question of when there is a similar duality on Hilbert spaces of holomorphic functions defined on Hermitian manifolds, including the complex hyperbolic space. This is joint work with Duong Ngoc Son. It turns out that the existence of a real holomorphic gradient vector field is crucial to get a similar duality of ∂ and ∂^* as in the case of the classical Segal-Bargmann space. We study Kähler metrics and conformally Kähler metrics, where the concept of a holomorphic torsion appears to be of importance.
