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*Quantisation on hyper-Kähler spaces*

Moduli spaces offer fertile ground for geometric quantisation. In that context, complex structures are commonly regarded as auxiliary data to be added to a symplectic form, the "true" classical structure. They also often come in families, and since they are extrinsic to quantisation one tries to remove them from the picture by constructing appropriate connections.

In the presence of a hyper-Kähler structure, however, there is no fixed underlying symplectic form: instead, there is a family of them, each coming with its own complex structure. In a joint work with J.E. Andersen and G. Rembado, we proposed a new approach to this problem, under sufficient symmetry assumptions, by introducing a holomorphic structure, rather than a connection, on the family of quantum Hilbert spaces, and tested it on a few interesting spaces. Furthermore, ongoing work with M. Mayrand has led to results in the case of Nahm moduli spaces, as well as insights on the problem of "quantisation commutes with reduction" for this new scheme.

In this presentation, I will give a panoramic of the new hyper-Kähler quantisation construction, and new results depending on time.