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Constraints, reduction, and quantization.

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Given a Lie group G acting symplectically on a symplectic manifold and a momentum mapping for this action, constrained classical systems with symmetry are defined as the ones for which the reduced phase space is assumed to be an orbit of the isotropy group of the momentum value, assumed to be invariant.

The author works in the cotangent bundle category whose reduction process has been studied by M. Kummer [Indiana Univ. Math. J. 30 (1981), no. 2, 281–291; MR 82e:58041]. By assuming G compact and by considering G -invariant polarization-preserving observables, it is shown that there exists a unitary equivalence which intertwines the quantizations of such observables on the initial symplectic manifold and on the reduced phase space. For earlier work in the same spirit see a paper by A. Ashtekar and M. Stillerman [J. Math. Phys. 27 (1986), no. 5, 1319–1330; MR 87d:58063]. *Martine J. Perrin* (F-CNRS-T)