

14.1: Introduction to Hamiltonian Mechanics

The hamiltonian equations of motion are of deep theoretical interest. Having established that, I am bound to say that I have not been able to think of a problem in *classical* mechanics that I can solve more easily by hamiltonian methods than by newtonian or lagrangian methods. That is not to say that real problems cannot be solved by hamiltonian methods. What I have been looking for is a problem which I can solve easily by hamiltonian methods but which is more difficult to solve by other methods. So far, I have not found one. Having said that, doubt not that hamiltonian mechanics is of deep theoretical significance.

Having expressed that mild degree of cynicism, let it be admitted that Hamilton theory – or more particularly its extension the Hamilton-Jacobi equations - does have applications in celestial mechanics, and of course hamiltonian operators play a major part in quantum mechanics, although it is doubtful whether Sir William would have recognized his authorship in that connection.

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