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48824-1027. *A complex geodesic flow.*

When one poses a question like, what is the complex analogue of the geodesic flow, many objections may arise in one's mind, e.g.

1) What is a complex geodesic?

2) The home of the classical geodesic flow is the unit tangent bundle and an important special case is when the base manifold is a compact Riemannian manifold of negative curvature; in this case the geodesic flow is an Anosov flow. In contact metric geometry the tangent sphere bundle is an important example and the characteristic vector field (Reeb vector field) of the contact structure is twice the geodesic flow. So what is the complex analogue of the unit tangent bundle?

3) Since there is no natural ordering of the complex numbers, how can one have a flow?

We will address these objections and discuss a complex geodesic flow for complex space forms. We will conclude with a discussion of the relation of this problem to complex contact geometry. (Received August 18, 2009)