Ralph J. Bremigan* (bremigan@bsu.edu), Department of Mathematical Sciences, Ball State University, Muncie, IN 47306-0490. Hyperkähler structures on complexified Hermitian symmetric spaces: deformations and orbits. Preliminary report.

In the 1980-90s, a hyperkähler structure on any complexified Hermitian symmetric space $G/K$ was discovered, relying on identifying $G/K$ with a coadjoint orbit $O$ and with the cotangent bundle of a flag manifold.

I have found a diffeomorphism of $G/K$ that intertwines the complex structure on $O$ with almost all of the others. This yields a formula for the holomorphic action of $G$ on $G/K$ that extends the usual action of the compact real form $G_u$ of $G$. I also have found a diffeomorphism that intertwines the real symplectic form associated to $T^*(G/Q)$ with almost all of the others.

This provides a setting to apply machinery of Heinzner, Schwarz, and Stötzel in the analysis of the actions of the real form $G_0$ on $G/K$ obtained by restricting to $G_0$ the various holomorphic actions of $G$ on $G/K$. Most of the actions have the same $G_0$-orbit structure as on $O$, but the same moment-critical sets as on $T^*(G/Q)$, which differ from the one for $O$.

I will illustrate results for $SL_2$. (Received January 24, 2019)