POSITIVITY CONES IN THE AEPPLI COHOMOLOGY OF BIDEGREE $(n-1, n-1)$ ON n-DIMENSIONAL COMPACT COMPLEX MANIFOLDS

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We shall present the notions of Gauduchon cone and strongly Gauduchon (sG) cone that we introduced in a recent preprint for a compact complex manifold and their relevance to the theory of holomorphic deformations of complex structures on a fixed compact differential manifold. We shall also explain the role that these cones play in intrinsic characterisations of Fujiki's class C manifolds (=compact complex manifolds that are bimeromorphically equivalent to compact Kähler manifolds) and in $\partial\bar{\partial}$-manifolds (=compact complex manifolds satisfying the $\partial\bar{\partial}$-lemma, hence in particular behaving cohomologically like compact Kähler manifolds).

These positivity cones are subsets of the real Aeppli cohomology group of bidegree $(n-1, n-1)$ of the ambient manifold X, where n is the complex dimension of X. As such, they are conjecturally dual to by-now standard positivity cones in the Bott-Chern cohomology of bidegree $(1, 1)$ of X under the classical duality between the Bott-Chern and the Aeppli cohomologies of complementary bidegrees.

We shall also present a new equation of the Monge-Ampère type in bidegree $(n-1, n-1)$ rather than $(1, 1)$ that we introduced recently and its geometric implications.

The future applications of these results include a possible future theory of moduli spaces of Calabi-Yau $\partial\bar{\partial}$-manifolds.