

ON METRIC AND COHOMOLOGICAL PROPERTIES OF OELJEKLAUS–TOMA MANIFOLDS

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Abstract: We study metric and cohomological properties of Oeljeklaus–Toma manifolds. In particular, we describe the structure of the double complex of differential forms and its Bott–Chern cohomology and we characterize the existence of pluriclosed (aka SKT) metrics in number-theoretic and cohomological terms. Moreover, we prove that they do not admit any Hermitian metric ω such that $\partial\bar{\partial}\omega^k = 0$, for $2 \leq k \leq n - 2$, and we give explicit formulas for the Dolbeault cohomology of Oeljeklaus–Toma manifolds admitting pluriclosed metrics.

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Key words: Oeljeklaus–Toma manifold, Hermitian metric, pluriclosed, SKT, cohomology, Bott–Chern cohomology.