

Hermitian manifolds with flat Gauduchon connections

RAMIRO A. LAFUENTE AND JAMES STANFIELD

Abstract. We complete the classification of compact Hermitian manifolds admitting a flat Gauduchon connection. In particular, we establish a conjecture of Yang and Zheng, showing that, apart from the cases of a flat Chern or Bismut connection, such manifolds are Kähler. More generally, we prove that the same result holds when the flatness assumption is replaced by the so-called Kähler-like condition, proving a conjecture of Angella, Otal, Ugarte and Villacampa. We also treat the non-compact case.

Mathematics Subject Classification (2020): 53C29 (primary); 53C55 (secondary).