

Buchdahl, N. P.**Instantons on $\mathbb{C}P_2$.** (English) Zbl 0586.32034

J. Differ. Geom. 24, 19-52 (1986).

For the groups $G = SU(n)$, $Sp(n)$, $SO(n)$ and $U(n)$ all G -instantons on $\mathbb{C}P_2$ are described and classified. The description is an analogue of the Atiyah-Drinfeld-Hitchin-Manin construction for instantons on S^4 , utilizing the one-to-one correspondence between instantons and holomorphic vector bundles on the associated twistor space together with techniques from the classification theory of stable bundles on projective spaces. From this description the various moduli spaces of (topologically distinct) instantons are constructed, and precise conditions are given under which, and only under which, irreducible G -instantons of specified topological type exist on $\mathbb{C}P_2$. The moduli space of $SU(2)$ -instantons of second Chern class -1 is constructed explicitly as an example.

MSC:**32L05** Holomorphic bundles and generalizations**32L10** Sheaves and cohomology of sections of holomorphic vector bundles, general results**32L25** Twistor theory, double fibrations (complex-analytic aspects)**14F05** Sheaves, derived categories of sheaves, etc. (MSC2010)**32G13** Complex-analytic moduli problemsCited in **5** Reviews
Cited in **13** Documents**Keywords:**Yang-Mills field; monad; moduli spaces of instantons; G -instantons; holomorphic vector bundles; twistor space; stable bundles on projective spaces**Full Text:** [DOI](#)