

Okonek, Christian; Teleman, Andrei

Seiberg-Witten invariants and rationality of complex surfaces. (English) Zbl 0883.57022

Math. Z. 225, No. 1, 139-149 (1997).

The paper begins with an easy introduction to Spin^c -structures on 4-manifolds and the associated Seiberg-Witten monopole equations. Then it explains the structure of the corresponding Seiberg-Witten invariants with special emphasis on the particular case of manifolds with $b_+ = 1$. Next it is shown that monopoles on Kähler surfaces have a purely holomorphic interpretation as effective divisors. The present proof is a simplified version of the Kobayashi-Hitchin type correspondence which was obtained in [the authors, Int. J. Math. 6, No. 6, 893-910 (1995; Zbl 0846.57013)]. As an application, a simple and selfcontained proof is given for the fact that rationality of complex surfaces is a C^∞ -property.

Reviewer: C.Okonek (Zürich)

MSC:

57N13 Topology of the Euclidean 4-space, 4-manifolds (MSC2010)

57R15 Specialized structures on manifolds (spin manifolds, framed manifolds, etc.)

57R57 Applications of global analysis to structures on manifolds

Cited in 1 Document

Keywords:

Spin^c -structures; 4-manifolds; Seiberg-Witten monopole equations; Seiberg-Witten invariants; Kähler surfaces; complex surfaces

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