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**Anton Kapustin\*** ([kapustin@theory.caltech.edu](mailto:kapustin@theory.caltech.edu)), 1200 E. California Blvd., Pasadena, CA 91125. *Chiral de Rham complex and the half-twisted sigma-model.*

On any Calabi-Yau manifold  $X$  one can define a certain sheaf of chiral  $N=2$  superconformal field theories, known as the chiral de Rham complex of  $X$ . It depends only on the complex structure of  $X$ , and its local structure is described by a simple free field theory. We show that the cohomology of this sheaf can be identified with the infinite-volume limit of the half-twisted sigma-model defined by E. Witten more than a decade ago. We show that the correlators of the half-twisted model are independent of the Kahler moduli to all orders in worldsheet perturbation theory, and that the relation to the chiral de Rham complex can be violated only by worldsheet instantons. (Received September 17, 2005)