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Nilpotent structures and collapsing Ricci-flat metrics on K3 surfaces.

We exhibit families of Ricci-flat Kähler metrics on K3 surfaces which collapse to an interval, with Tian-Yau and Taub-NUT metrics occurring as bubbles. There is a corresponding continuous surjective map from the K3 surface to the interval, with regular fibers diffeomorphic to either 3-tori or Heisenberg nilmanifolds. (Received January 29, 2019)