NEAR-EARTH ASTEROID SURFACE ROUGHNESS DEPENDS ON COMPOSITIONAL CLASS.

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Radar observations of 189 near-Earth asteroids reveal very strong correlation of circular polarization ratio with visible-infrared taxonomic class, establishing distinct differences in the centimeter-to-decimeter structural complexity of objects in different spectral classes. The correlation may be due to the intrinsic mechanical properties of different mineralogical assemblages but also may reflect very different formation ages and collisional histories. The highest ratios are measured for groups associated with achondritic (igneous rocky) meteorites: the E class, whose parent body may be 3103 Eger, and the V class, derived from the mainbelt asteroids (and Dawn mission target) 4 Vesta.