



Study of the changes of the distribution of spectral properties of S-type asteroidal dynamical families with age: Mean values and Skewness.

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Correlations between family-age and the mean value of slope of the spectral distribution, caused by the cumulative effect of cosmic irradiation, have been established for S-type dynamical families by many authors. We noticed that if there is a variety in the primordial surface composition, then the typical timescale that determines the speed of this evolution is bound to have a range of values. Consequently, as the mean value of the color distribution tends to steeper (redder) slopes, a progressive skewness in this distribution should develop. Using SDSS-MOC-4 colors and NEOWISE albedos, we cross-examined the S-type families members as defined by both Nesvorný et al. (2015) and Spotto et al (2015) and retained only members with albedos and colors in the characteristic range of the S-types. We corroborate the color evolution with age and we compare our results with previous estimations. Using only the "true S-type" family members, we also find a significant correlation between some particular skewness-estimation parameters and age. Our results offer additional evidence of the effects of cosmic-radiation on asteroidal surfaces and may provide possible new relations to determine the age of S-type dynamical families.

References

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