

Galactic comets as unique tool for studying spiral construction of the Galaxy

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Galactic comets are a previously unknown class of high-speed cosmic bodies that intensively bombard the Solar system and its planets during the periods when Sun enters jet streams and spiral arms of the Galaxy. In the Earth geological history, all such bombardments have been record today by geologists as boundaries of the corresponding rank in stratigraphic scales of the Phanerozoic and Precambrian. A Galactic model has been built that makes it possible to theoretical calculate with high accuracy the age of these boundaries, linking them with Sun's motion in Galaxy and cometary bombardments of different intensities. Based on this model: 1) it has been established that since Solar system formation, Sun's orbit and Galaxy spiral structure have not changed; 2) the phenomenon of collective parametric resonance, which is unknown in galaxies, has been discovered, which affects Sun's orbital motion; 3) the Galaxy gravitational potential distribution is found, which proves that model isothermal sphere of stars an adequate physical model of Galaxy; and 4) the Galaxy spiral structure parameters have been refined, which are difficult or impossible to determine from astronomical observations.