

COMPUTER ALGEBRA AND CHAOTIC DIFFUSION OF PLANETARY MOTIONS IN THE SOLAR
SYSTEM.

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The evidence of the chaotic movement of the planets in the solar system was obtained thanks to a numerical integration of the averaged equations of motion (Laskar, 1989). This system of equations containing more than 150,000 terms had been obtained by very dedicated methods of computer algebra, whose adaptation to other problems was not easy. Since 1988 began the construction of a general computer algebra system, TRIP, specially adapted to celestial mechanics calculations and perturbation methods. We have recently used this system to get a better understanding of the origin of chaos in the solar system, and to study the chaotic diffusion of the motion of the planets over times well in excess of the age of the universe.