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Author: Ms. Tunzala Mammadova
Azerbaijan State Pedagogical University (ASPU), Azerbaijan

THE ROLE OF MATHEMATICS IN ASTRONOMY

Abstract

In this article, information about the relationship between space research and mathematics and the role of mathematics in space research is reflected. Mathematics is important for everyone's life. It is an integral part of daily life. Mathematics shows itself as a certain element not only for the formation and clarification of concepts and scientific laws but also for the creation and development of new contributions to science and technology. In this article, it is discussed how mathematical knowledge is widely applied in determining the laws of movement of cosmic bodies, the distances from the Earth to them and between them, and the dimensions of celestial bodies. At the same time, the devices used in space flights and for controlling and applying computers are the product of large mathematical calculations. As astronomy is a mathematical science, astronauts are used to control the spaceship, take effective collisions between energy-moving bodies as a potentially dangerous possibility, and even use complex mathematical controls to calculate how they affect people. As can be seen, the role of mathematics in the development of these fields used in the study of outer space and its objects is great. Obviously, in our solar system, mathematical skills allow us to descend into the depths of space. As far as we know, there is no way for humans to go to the core of our galaxy and confirm the existence of a black hole. But thanks to mathematics, we can understand how these objects exist and how they work. The first mathematical and astronomical innovations were made during the Mesopotamian and Babylonian civilizations. The apparent motion of the sun was used to predict the positions of eclipses and celestial bodies in terms of degrees of latitude and longitude. Later, as a result of mathematical calculations, scientists showed that there is life on other planets besides the Earth. The most important event in the history of astronomy was the discovery of Neptune. Thus, Neptune, whose existence was confirmed visually in 1846, was the first planet discovered not by observation but by mathematical methods. Mathematics is a powerful tool and a universal science for other fields of science, and it is also a basic and fundamental field of science for astronomy.