



CONJUNCTION AND SOLSTICE BETWEEN HISTORY AND CELESTIAL MECHANICS

News

The next Jupiter and Saturn's great conjunction of December 21, will allow us to reason on the hypothesis developed by Kepler on the Star of Bethlehem: in his opinion, the similar conjunction occurred in the year 7/6 b.c. was the cause of the appearance of the Star, it was not a star. To think about this issue, the meeting "Conjunction and solstice between History and Celestial Mechanics" has been organized at ICRANet center (International Center for Relativistic Astrophysics) with its Seat in Pescara. This e-meeting will be held online on December 21, 2020 starting from 4:30 PM to 6:00 PM (Italian time), with the participation of astronomers from all over the World.

Link to the meeting web page: http://www.icranet.org/index.php?option=com_content&task=view&id=1351

Historical basis

For the ancient men all the way to the post Renaissance period, the planetary conjunctions have offered the opportunity to verify the existing planetary theories. In those days, Astronomy addressed not their internal constitution, possibly different from the one surrounding us and still unknown, but what was attracting their attention was their motion and especially the possibility to predict their position in the sky well in advance. This conceptual plan was named "the quintessence" of the nature of the celestial spheres dictating their motion. The ancient world attempted to solve this problem and the great synthesis of these efforts is contained in the *Almagest* of Ptolemy.

Over the time, the observations become more and more accurate and so also the rethinking of their interpretation. It became clear that the Ptolemaic system was not accurate enough to describe additional effects as the Solstices and Equinox, the angular dimension of the Sun which could not have annular eclipses and the precise position of the Moon.

A continuous attraction through the centuries has been attempted to explain the nature of the "*Star of Bethlehem*". In 1986, a major meeting celebrating the reaching by a satellite of the Halley Comet, was organized in Rome by ICRA, under the auspices of His Holiness Pope John Paul II, the President of the Republic of Italy Francesco Cossiga as well as with the Heads of several international space agencies (ESA, Intercosmos, Institute of Space and Astronautical Science and National Aeronautics and Space Administration). There, the emphasis was given to the enormous success of a space mission in reaching this Comet during one of its regular visits, observed since 240 b.c. We have been symbolically inspired by the work of Giotto di Bondone, who included the Comet as the Star of Bethlehem in his fresco "*The adoration of the Magi*", which adorns La Cappella degli Scrovegni in Padua – Italy (http://www.icranet.org/documents/halley_comet.pdf).

An alternative explanation very sophisticated has been advanced in 1653 by Tycho Brahe and a new possibility was advanced: the Bethlehem Star was not really a Star but a consequence of the conjunction between Jupiter and Saturn, precisely the same process which we will evidence tonight, December 21, 2020 in the sky.

Tycho realized that, in order to be predictive and accurate, the entire field of Astronomy should be modified. He developed and invented new instruments but, more than everything else, he created the first modern Research Institute. In that Institute, he hired as a young scientist Kepler.

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The work of Tycho made possible the formulation by Kepler of his famous Laws. Together with his teacher Michele Maestlin, Kepler, at the age of 20, observed what he indicated as the “*conjunction-immersion*” of Mars into Jupiter, which he described as “*the red Mars entering the white Jupiter*”.

It is a great opportunity for us to assist to this process which is only apparent, second only to what was visible in 1226, since actually Saturn and Jupiter are 640 million km apart and their conjunction is only a projection effect.

What is truly interesting is that Kepler kept observing conjunctions of Mars both with Saturn and Jupiter during the first decades of October 1604 and “*lì sotto*” exploded a Supernova which today we call the Kepler Supernova, which remained visible for almost one year.

Ten years later (1614), in the work “*De Vero Anno*” in cui Gesù Cristo nacque dalla Beata Vergine Maria, Kepler studied this mechanism for explaining the appearance of this Star of Bethlehem.

Kepler was able to collocate the birth of Jesus Christ in 6/7 b.c. since Herod died on 4 b.c., just after a moon eclipse which occurred on March 23, 4 b.c. and after he ordered the Massacre of the Innocents.

All this was recorded by Giuseppe Flavio, a Jewish historian who had testified the fall of Jerusalem of 70 a.c., who wrote for the Emperors of the Flavian dynasty.

Kepler realized that the term “*conjunction*” did not mean “*immersion*” of Jupiter into Saturn, but only that one of the two coordinates ecliptics were equal.

Paradoxically, Kepler advanced the new idea that, in view of the triple conjunctions he had observed between Saturn and Jupiter and the explosion of the Supernova, the real nature of the Star of Bethlehem has been a Supernova.

No matter this discussion, we will explain why the birth of Jesus definitely occurred before Christ.

This is a splendid example of how culture, astronomy and religion can be enhanced, enriching our life on planet Earth.

In brief

On the occasion of the event organized by ICRANet (http://www.icranet.org/index.php?option=com_content&task=view&id=1351) together with experts of Celestial Mechanics, history of Astronomy and General Relativity, we will show that in the post-Alexandrian period, the modernity of Science was such that the observation of that triple conjunction was a good opportunity to refine the “*superne rote*” and the *Table of Sippar* (10 b.c.) demonstrate that the conjunction was expected. We will explain the planetary conjunctions which have marked the history of Astronomy: Jupiter-Saturn in 6/7 b.c. 1604, Uranus-Neptune 1821, Jupiter-Mars 1591 and 1604. We will also discuss about the coincidence with the winter solstice, as well as about the chaotic solutions of the gravitational system of *N-body*, which prevent to have clear solutions very far in time and make unstable our solar system. All the above has the aim to clarify a field in which historical, astronomical and physical competences are jointly necessary.

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