Oral Presentation

THE PROBLEM OF THE PARALLELS AT THE 18th CENTURY: KÄSTNER, KLÜGEL AND OTHER PEOPLE

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During the 18th century a lot of work on the problem of the parallels – that was in the traditional understanding, proving Euclid's parallel postulate on the base of his other axioms and postulates – was done. There was G. Saccheri with his remarkable work "Euclidis ab omni naevo vindicatus" (1737) – which remained more or less completely unnoticed - on one hand and A.M. Legendre with his widespread demonstrations ("Eléments de géométrie" (1794)) on the other hand. But in between there was also a remarkable dissertation written by Georg Simon Klügel ("Conatuum praecipuorum theoriam parallelarum demonstrandi recensio" (1763)) under the guidance of Abraham Gotthelf Kästner at Göttingen; it was the latter who draw some skeptical conclusions of the work done by Klügel in his remarks in his "Anfangsgründe" (first published 1758-1764; there are different later editions).

In my conference I want to retrace in a short way the history of the problem of the parallels in particular the proposals made by Saccheri and Legendre. Its main purpose is to describe Klügel's critical work and the conclusions derived from it by Kästner. We will see that the convictions of the mathematicians were surprisingly enough very important in this history – the main difference between J. Bolyai and N. Lobachevsky on one hand and their precursors laying exactly in this respect, Klügel and Kästner being remarkable forerunners of them.

The dissertation by Klügel is now available in a German translation by Dr. M. Hellmann (Weilheim) in Volkert, K. "Das Unmögliche denken. Die Rezeption der nichteuklidischen Geometrie im deutschsprachigen Raum 1860 – 1900" (Heidelberg: Springer, 2013).