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Reich, Karin

A new leaf in Euler's laurel wreath, interlaced by Carl Friedrich Gauß. (Ein neues Blatt in Eulers Lorbeerkranz, durch Carl Friedrich Gauß eingeflochten.) (German)

In May 1844, Gauß sent to Paul Heinrich Fuß, son of the aging Euler's assistant Nikolaus Fuß and secretary of the Saint-Petersburg Academy of Sciences, a manuscript copy of an article by Euler published in a journal where nobody had looked for it, although its title was known but connected to wrong publication data. The topic was a second proof of Eulers solution to the "Basel problem" $\sum_{n=1}^{\infty} \frac{1}{n^2}$ – actually the first real proof, since the first one had been based on analogy and intuition; the recipient (himself a grandgrandson of Euler) characterized it as "ein frisches Blatt in Euler's Verdienstkrone", "a fresh leaf in Euler's laurel wreath". The existence of Gauß' transcription was known to later editors of Euler's works, but its location was unknown until it was discovered a couple of years ago.

Karin Reich relates this story and weaves around it another laurel wreath in honour of Gauß and Euler, telling inter alia

- the story of the lists of Euler's publications, from those of Nikolaus Fuß to that of Eneström;
- that of the *Journal littéraire d'Allemagne*, in which Euler's paper had appeared (in the problematic shape to be expected when a journal with no tradition of mathematical publishing has to typeset formulae – she also lists Gauß' emendations of the text and the formulae);
- about Euler's and the Bernoulli's work on the Basel and related problems, in a broader context of Euler's interest in the sums of infinite series;
- and about the interest of the young Gauß in the series summations.

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Keywords: Euler; Gauß; Basel problem; St-Petersburg Academy of Sciences; summation of infinite series; Fuß, Nikolaus; Fuß, Paul Heinrich

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- 01A55 Mathematics in the 19th century
- 01A90 Bibliographic studies