
Abstract. — In 1802 Gian Domenico Romagnosi observed in Trento the deviation of the magnetic needle induced by an electric current. Did he anticipate the most famous Oersted’s experiment of 1820? Did he ever claim priority in the discovery of electromagnetism? Who was aware of his results? The historical debate on Romagnosi’s experiment is reviewed on the basis of documents so far ignored in the literature.

Key words: History of Electromagnetism; Physics; Gian Domenico Romagnosi.


1. Introduction

Electricity, a subject with its origins in antiquity, saw its most important development at the end of the nineteenth century, and its application in the twentieth century. Magnetism also comes to us from antiquity especially with the elucidation of Gilbert in his De Magnete of 1600. At present we understand that these phenomena are but different manifestations of one comprehensive theory, electromagnetism. Electromagnetism is one of the great discoveries of all time and is basic to the understanding and applications of modern sciences so it is of considerable historic interest to know when it was first realized that electricity and magnetism were not completely separate subjects, but were related.

Hans Christian Oersted (1820) is usually given the credit for the discovery of electromagnetism. In his famous experiment made public in 1820 he showed that a current can interact with a magnet (magnetic compass needle). Moreover he understood the transverse nature of the force generated by the current flowing in the wire.

However, it is strange that an Italian jurist and amateur physicist, Gian Domenico Romagnosi, had made a similar discovery eighteen years before. Why did Oersted get so much credit for his much later discovery, while Romagnosi prior discovery has been nearly forgotten? Several authors of the XIX century investigated the problem and raised a series of questions:

a) What did Romagnosi really observe in 1802?

b) Should Romagnosi rather than Oersted be considered the discoverer of electromagnetism?

c) What other people knew of this work, and when?

d) Did Romagnosi ever claim priority in the discovery of electromagnetism after the publication of the Oersted’s paper?

Almost 200 years after the Romagnosi’s experiment the above questions have received only a partial and unsatisfactory answer. In his book Dibner (1962) presented a discussion of Romagnosi’s experiment and of the literature on the subject. The main conclusion can be summarized as «Romagnosi came close, but failed, to discover electromagnetism».

It is worth noting that all the authors who investigated the problem, including Dibner, based their analysis and conclusions on the paper published by Romagnosi (3 agosto 1802) on the Gazzetta di Trento. The purpose of the present work is to discuss the historical debate on the Romagnosi’s experiment on the basis of other documents so far practically ignored in the literature. These include:

- A second paper written by Romagnosi (13 agosto 1802) and published on the Gazzetta di Rovereto. With respect to the article of the Gazzetta di Trento this second paper contains more information on the experiment carried out in Trento.
- The proof that Romagnosi, in October 1802, sent his paper to Paris (Académie des Sciences, 1802).
- A private letter written by Romagnosi in 1827 (Fermi, 1935), commenting on Oersted’s experiment and claiming priority in the discovery of electromagnetism.

2. Historical Review

2a. Romagnosi «Physicien De Trente».

Let us first recall briefly that electric and magnetic phenomena had been known since ancient times but that the studies of the physiologist Luigi Galvani, concerning what he called animal electricity were announced in 1791 and that Alessandro Volta had developed by 1800 a cell (like a modern battery cell) capable of producing a substantial electric current in a wire connected between its electrodes.

Within a few years Romagnosi had speculated about the possibility of there being an interaction between the voltaic current and a magnetic compass needle. In the month of May 1802 he completed in Trento the experiment in which he observed the deviation of the magnetic needle. He published the results on August 1802 in two papers appeared on local journals. The first one (Romagnosi, 3 agosto 1802) was published in the journal Ristretto dei Foglietti Universali (usually referred to as Gazzetta di Trento). This paper (fig. 1) became rather popular after Oersted’s discovery and its text was reported by many authors of the XIX and XX century.

A few days later, on August 13, a longer paper (Romagnosi, 13 agosto 1802) appeared in the journal Notizie Universalì (usually referred to as Gazzetta di Rovereto) (fig. 2a, b, c).