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Reply to Comment on “‘Rutherford's experiment’ on alpha particles scattering: the experiment that never was”

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Abstract - A brief reply to Prof. Campbell's comment follows below.

We thank Prof. Campbell for having pointed out an inaccuracy in his comment to our work [1]. In our paper, there is indeed a minor inaccuracy about the real position of Hans Geiger in Manchester [2]. On page 4 of our paper, talking about Hans Geiger, it is written "young Rutherford's PhD student at the University of Manchester". This should be changed to "young Rutherford's assistant at the University of Manchester". As a matter of fact, Hans Geiger had already earned his PhD at the University of Erlangen under Eilhard Wiedemann on July 23, 1906, with a thesis by the title "Strahlungs-, Temperatur- und Potentialmessungen in Entladungsröhren bei Starken Strömen" (Radiation, temperature and potential measurements in discharge tubes with strong currents") (e.g. see "Hans Geiger", by A. T. Krebs, in *Science*, 27 July 1956, Vol. 124, Issue 3213, p. 166).

We also agree with the other points raised by Prof. Campbell. Certainly, most of the radioactive work done in the laboratory was done under Rutherford's direction. And, certainly, he gave more than full credit to his junior collaborators and his name was only on those papers where much of the measurement work was personally carried out by him. We did not address these points in our paper since they are not relevant to our main argument. Our paper was indeed aimed at reacting to the usual textbook treatment about the "Rutherford experiment", and giving a detailed account of the real performance of the experiments. Prof. Campbell agrees with our argument "that modern illustrations of the alpha scattering experiment are misleading and not of the time".

References

- [1] Campbell J 2019 Comment on “Rutherford's experiment’ on alpha particles scattering: the experiment that never was” *Phys. Educ.* **54**
- [2] Leone M, Robotti N and Verna G 2018 Rutherford's experiment’ on alpha particles scattering: the experiment that never was” *Phys. Educ.* **53** 035003 (10 pp)