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**Celebration of the Periodic Table of the Elements
at the Academy of Sciences of Lisbon
A Mathematics Journey**

Preface

JOSÉ FRANCISCO RODRIGUES



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November 21st, 2019

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The UNESCO decided to celebrate the year 2019 as the "*International Year of the Periodic Table of Chemical Elements*" – <https://iypt2019.org/> – commemorating all around the world the 150th anniversary since Dmitry Mendeleev discovered the Periodic System. Initially with only 61 elements but containing a strong prediction potential to accommodate new elements reaching nowadays 118, the Periodic Table is of central importance to chemistry and, after one and half century of life, it became one of the indispensable tools for science and an icon for scientific inquiry.



Figure 1.
The President of the Academy, Professor Carlos Salema (right), at the opening of the Mathematics Journey on the Periodic Table coordinated by the author (left).

In a joint initiative of two ERCOM members of the European Mathematical Society, the *Centro Internacional de Matemática* (CIM), from Portugal, and the *Instituto de Ciencias Matemáticas* (ICMAT), from Madrid, Spain, a mathematical session to celebrate the sesquicentennial of the Periodic Table at the Academy of Sciences of Lisbon was organised by its Section of Mathematics and took place the 21st November 2019.



Figure 2.

The speakers at the Mathematics Journey on the Periodic Table in the *Academia das Ciências de Lisboa*: (from left to right) Adelino Paiva, Antonio Córdoba, José Francisco Rodrigues and Manuel Yáñez.

The scientific programme of the Mathematics Journey consisted of four talks, by two mathematicians and two chemists, which were streamed online and can be found at <http://www.cim.pt/agenda/event/208>:

D – Mathematics and the Periodic Table

- *Some mathematical aspects of the Periodic Table*
José Francisco Rodrigues (CIM, Academia das Ciências and FCIências/ULisboa)
- *The Periodic Table. The power of systematisation. The importance of precision*
Manuel Yáñez and Otilia Mo (Universidad Autónoma de Madrid)
- *Are atoms the bricks of molecules?*
Adelino Galvão (ISTécnico/ULisboa)
- *Counting lattice points and atomic energies oscillations*
Antonio Córdoba (ICMAT and Universidad Autónoma de Madrid).