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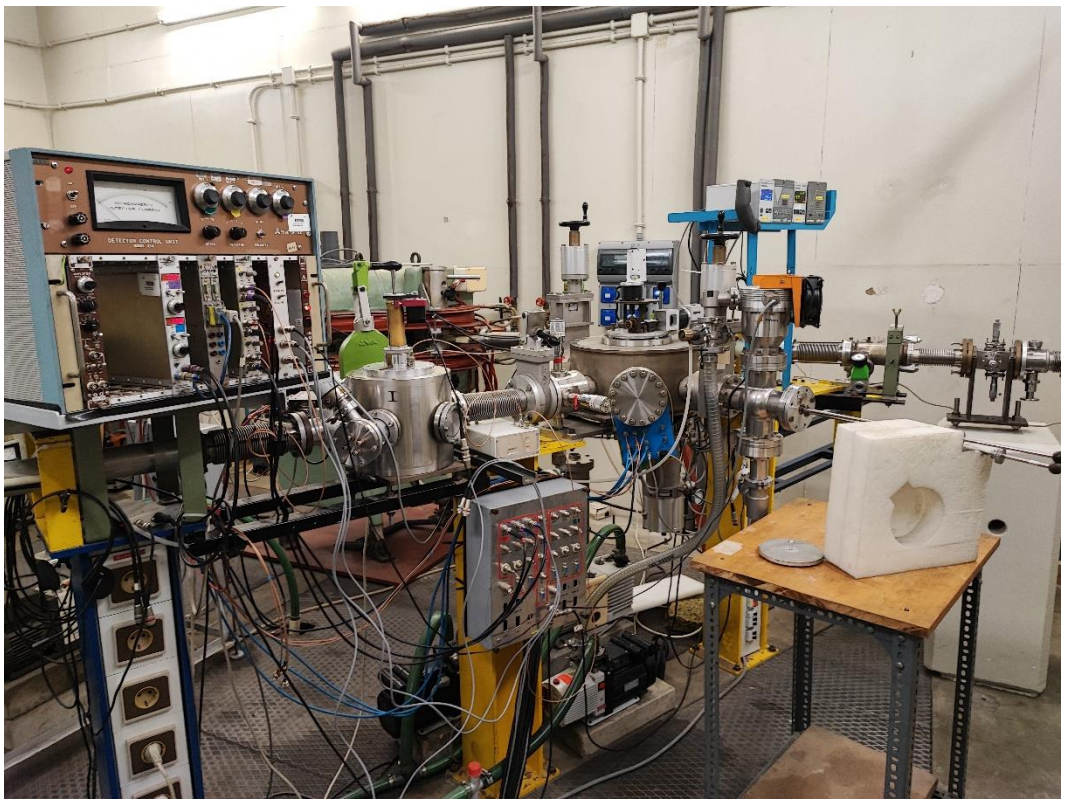
Days of 14th to 18th of April 2025 we spent at Laboratory of Accelerators and Radiation Technologies CTN working within ERASMUS+ Staff Mobility for Training program :

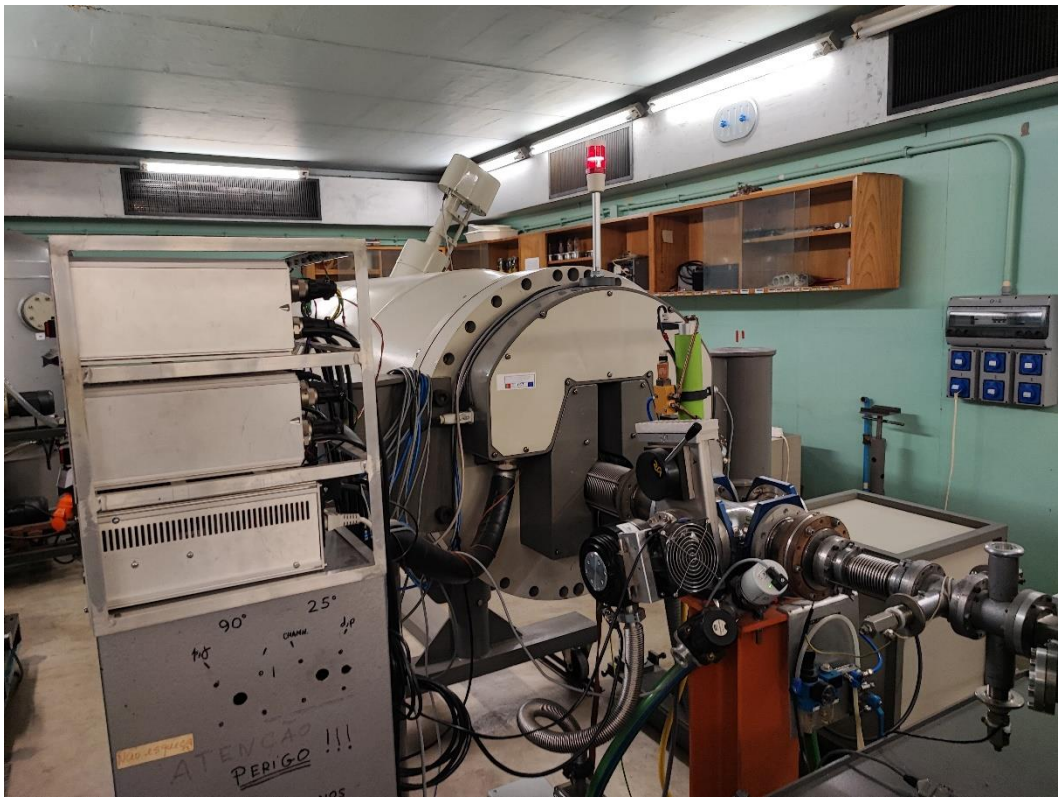
Day 1: First day of our mobility was dedicated to safety training and theoretical introduction to Rutherford Backscattering measurements as well as implantation technique. First we were introduced to measurement technique that we were planning to employ during our stay – RBS – which was used to determine elemental composition and distribution of elements in samples grown by plasma assisted molecular beam epitaxy. We also learned about implantation methods used at Laboratory of Accelerators and Radiation Technologies CTN for doping of our samples (in our case – with terbium).

Days 2-4: On subsequent days we were trained in RBS technique and afterwards we started measurements of our samples, which were ZnMgO based quantum structures doped with europium grown with plasma assisted MBE with some of the samples additionally doped with terbium by the means of implantation. The RBS (which is not present in our institute) allowed us to estimate the composition of our samples (e.g. Mg to Zn ratio and content of Eu and Tb dopants) as well as spatial distribution of doped materials in them. We could also participate in implantation of our samples with terbium, as this technique is also absent from our institute.

Day 5: The last day was spent by us on data analysis. We discussed our results with local staff and made decision about further steps regarding both cooperation between CTN and Institute of Physics PAS and work on rare earth doped zinc magnesium based nanostructures.



Pic. 1 RBS measurements setup



Pic. 2 Van De Graaff accelerator used in experiment