We present the results obtained in the experiment: “Lifetime measurements in neutron-rich Ni, Cu and Zn isotopes” performed in June 2010 at Laboratori Nazionali di Legnaro (Italy).

The aim of the experiment has been to measure the lifetime of excited states in neutron-rich nuclei in the region of $^{76}\text{Ni}$, in our particular case in the $^{71}\text{Cu}$ isotope, through the recoil distance Doppler shift method (RDDS), using the AGATA Demonstrator coupled to the PRISMA spectrometer and to the plunger device provided by the University of Cologne. This is the first time this setup has been used together in an experimental measurement.

The states have been populated in a multi-nucleon transfer reaction between a $^{76}\text{Ge}$ beam of 577 MeV energy and a $^{238}\text{U}$ target of 1.5 mg/cm$^2$ together with a 1.4 mg/cm$^2$ thick Ta backing. The target was mounted together with a Nb degrader foil of 4.2 mg/cm$^2$ thickness in a compact Plunger device. The projectile-like reaction partners were identified using the PRISMA magnetic spectrometer, which was positioned at 55$^\circ$ with respect to the beam axes, close to the grazing angle, while $\gamma$ rays were detected by the AGATA Demonstrator located at backward angles sensitive to their Doppler shift.

The measured value for the reduced transition probability, obtained through the lifetime determination of the $7/2^-$ excited state in $^{71}\text{Cu}$, is in good agreement with large shell-model theoretical calculations. The results of the work will be discussed in detail at the talk.