^{50,53}Cr(n,γ) cross section measurement at n_TOF

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Abstract: Chromium is a very relevant element regarding criticality safety in nuclear reactors because of its presence in stainless steel, an important structural material. Currently, there are serious discrepancies between the different evaluations regarding the neutron capture cross sections of ^{50}Cr and ^{53}Cr, most probably related to the difficulties in the corresponding measurements due to the reduction and estimation of the very large neutron scattering effects.
In this context, the Nuclear Energy Agency (NEA) opened an entry in their High Priority Request List (HPRL) to measure these reactions between 1 and 100 keV with an accuracy of 8 to 10%. In response to this request, we have performed an experiment based on the time-of-flight technique at the n_TOF facility of CERN (Geneva, Switzerland) in Summer 2022. The first results and the data analysis strategy will be presented, including as well preliminary results from the ^{50}Cr neutron activation experiment at the HISPANoS facility of CNA (Seville, Spain).