

# POSITION-SENSITIVE COINCIDENCE SPECTROMETRY OF NEUTRON-INDUCED REACTION PRODUCTS

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The thesis devotes to the experimental study of nuclear reactions induced by fast and thermal neutrons in selected atomic nuclei.

The physics and motivation is to perform position-sensitive spectrometry of reaction products in coincidence in selected nuclei such as light nuclei - e.g.  $^{11}\text{B}$  for astrophysics and fusion studies, medium heavy nuclei such as Cd isotopes for nuclear structure study of collective modes of nuclear excitation (vibrational phonon), heavy nuclei for fission studies.

The main subject of the thesis is to assemble and operate the detector instrumentation consisting of arrays of position-sensitive detectors such as semiconductor pixel detectors Timepix and ionizing gas chambers equipped with multi-wire array. Tasks will include data evaluation and interpretation and comparison of results with theory and models. Experimental studies on selected nuclei mentioned above will be performed with mono-energetic neutrons of tunable energy in selected regions in the range 100 keV - 19 MeV at the Van-de-Graaff accelerator (IEAP CTU Prague).

Studies will be performed also with thermal neutrons at the a clean parallel beam at the 15 MW research reactor (NPI Rez near Prague) and the neutron sources at the JINR Dubna.