Contribution ID: **126** Type: **Poster**

High-resolution magnetic analyser MAVR for the study of momentum distributions of weakly-bound nuclei

A project of the high-resolution magnetic analyzer MAVR is proposed. The analyzer will comprise new magnetic optical and detecting systems for separation and identification of reaction products in a wide range of masses (5–150) and charges (1–60).
The magnetic optical system consists of the MSP–144 magnet and a doublet of quadrupole lenses. This will allow the solid angle of the spectrometer to be increased by an order of magnitude up to 30 msr. The magnetic analyzer will have a high momentum resolution (10–4) and high focal-plane dispersion (1.9 m). It will allow products of nuclear reactions at energies up to 30 MeV/nucleon to be detected with the charge resolution ~1/60. Implementation of the project is divided into two stages: conversion of the magnetic analyzer proper and construction of the nuclear reaction products identification system.
The MULTI detecting system is being developed for the MAVR magnetic analyzer to allow detection of nuclear reaction products and their identification by charge Q, atomic number Z, and mass A with a high absolute accuracy. The identification will be performed by measuring the energy loss (ΔE), time of flight (TOF), and total kinetic energy (TKE) of reaction products. The particle trajectories in the analyser will also be determined using the drift chamber developed jointly with GANIL.
These characteristics the best fit for study the momentum distribution of weakly bound nuclei. The momentum distributions were measured with the magnetic spectrometer MSP-144. It has been shown that the distribution width practically does not depend on the target. Its small value, sigma ~28 MeV/c, confirms the presence of a halo in 6He. The measurements with the 6Li beam were performed at the U400M accelerator at 18 and 46 MeV/A. A value of sigma ~50 MeV/c, intermediate between that for 6He and ordinary stable nuclei, was obtained for the width of the momentum distribution of the 4He fragments.

Primary author: Dr MASLOV, V. A. (Joint Institute for Nuclear Research, Dubna)

Co-authors: VOSKOBOINIK, E. I. (JINR Dubna); KOLESOV, I. V. (JINR Dubna); OSIPOV, N. F. (JINR Dubna); SKOBELEV, N. K. (JINR Dubna); LUKYANOV, S.M. (JINR Dubna); KAZACHA, V. I. (JINR Dubna); MELNIKOV, V. N. (JINR Dubna); PENIONZHKEVICH, Yu. E. (JINR Dubna); SOBOLEV, Yu. Gv (JINR Dubna)

Presenter: Dr MASLOV, V. A. (Joint Institute for Nuclear Research, Dubna)