

# Isospin dependence of the $\eta'$ meson production in nucleon-nucleon collisions

Joanna Przerwa  
for the COSY-11 collaboration  
Jagiellonian University

A comparison of the close-to-threshold total cross section for the  $\eta'$  production in  $pp \rightarrow pp\eta'$  and  $pn \rightarrow pn\eta'$  reactions constitutes a tool to investigate the  $\eta'$  meson structure and the reaction mechanism and may provide insight into the flavour-singlet (perhaps also into gluonium) content of the  $\eta'$  meson and the relevance of quark-gluon or hadronic degrees of freedom in the creation process.

The close-to-threshold excitation function for the  $pp \rightarrow pp\eta'$  reaction has already been determined [1-4], whereas the total cross section for  $\eta'$  meson production in the proton-neutron interaction is still unknown. Therefore, in August 2004 –for the first time– using the COSY-11 facility we have conducted a measurement of the  $\eta'$  meson production in the proton-neutron collision.

After explanation of the method of the measurement of the quasi-free  $pn \rightarrow pn\eta'$  reaction, the preliminary results for the quasi-free production of  $\eta'$  meson in the proton-neutron collisions will be presented and discussed.

- [1] P. Moskal et al., Phys. Lett. **B 474** (2000) 416.
- [2] A. Khokkaz et al., EUR. Phys. J. **A 20** (2004) 345.
- [3] F. Balestra et al., Phys. Lett. **B 491** (2000) 29.
- [4] P. Moskal et al., Phys. Rev. Lett. **80** (1998) 3202.

E-mail: j.przerwa@fz-juelich.de