Isomeric Island in the Vicinity of ⁶⁶Fe

J.M.Daugas, M.Sawicka, M.Pfützner, I.Matea, R.Grzywacz, N.L.Achouri, J.C.Angélique, D.Baiborodin, F.Becker, G.Bélier, R.Bentida, R.Béraud, C.Bingham, C.Borcea, R.Borcea, E.Bouchez, A.Buta, W.N.Catford, E.Dragulescu, A.Emsallem, G.de France, J.Giovinazzo, M.Girod, H.Goutte, G.Gorgiev, H.Grawe, F.Hammache, F.Ibrahim, K.L.Jones, R.C.Lemmon, M.Lewitowicz, M.J.Lopez Jimenez, P.Mayet, V.Méot, F.Negoita, F.de Oliveira-Santos, O.Perru, P.H.Regan, O.Roig, K.Rykaczewski, M.G.Saint-Laurent, J.E.Sauvestre, G.Sletten, O.Sorlin, M.Stanoiu, I.Stefan, C.Stodel, C.Theisen, D.Verney and J.Zylicz.

CEA/DIF/DPTA/SPN Bruyères le Châtel for Caen-Knoxville-Warsaw-Rez-Lyon-Bucharest-Surrey-Darmstadt-Strasbourg-Oak Ridge-Copenhagen-Saclay-Orsay-Gradignan-Leuven Collaboration.

Nuclear structure studies of neutron-rich isotopes produced in fragmentation of an ⁸⁶Kr beam at intermediate energies will be presented. Experiments have been performed at GANIL facility and were dedicated to the search of microsecond isomeric states in the neutron-rich nuclei with atomic numbers 20 < Z < 33 [1,2].

In the first experiment several isomeric states have been identified in neighbouring nuclei of the N=40 66 Fe isotope. Such isomers have been produced and selected using the LISE spectrometer.

The aim of the second experiment was a gamma-ray spectroscopy of transitions between states populated in deexcitation of isomers and in beta-decays. An improved experimental set-up used new devices, such as LISE2000 spectrometer and EXOGAM germanium array. The measured beta-delayed gammas from the decay of ^{67,68}Mn isotopes allowed us to determine the excitation energies and partial level scheme of the lowest states in the respective Fe daughter nuclei.

These results consist the experimental evidence of the deformation around N=40 for Z<28.

R.Grzywacz *et al.*, Phys. Rev. Lett. **81**, 766 (1998)
J.M.Daugas *et al.*, Phys. Lett. **B476**, 213 (2000)