Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Extreme deformations and clusterization at high spin in the $A \sim 40$ mass region[1] DEBISREE RAY, ANATOLI AFANASJEV, Mississippi State University — Recent revival of the interest to the study of superdeformation [1] and clusterization [2] in light nuclei has motivated us to undertake the study of extreme deformations in the $A \sim 32 - 50$ $N \sim Z$ nuclei. Unfortunately, at spin zero the predicted structures with extreme deformation are located at high excitation energies [2] which prevents their experimental observation. On the other hand, the rotation brings such structures closer to the yrast line [3] and, in principle, makes their observation possible with future generation of facilities such as GRETA. Thus, the systematic study of the extremely deformed structures and clusterization has been performed in the framework of cranked relativistic mean field theory. The major features of such structures, the spins at which they become yrast and the possiblities of their experimental observation will be discussed in this presentation.

[1] E. Ideguchi *et al*, Prog. Th. Phys. Supp. 196, 427 (2012).
[2] J.-P. Ebran, E. Khan, T. Niksic and D. Vretenar, Phys. Rev. C 90, 054329 (2014).
[3] A. V. Afanasjev and H. Abusara, Phys. Rev. C 78, 014315 (2008).

[1]This work has been supported by the U.S. Department of Energy under the grant DE-FG02-07ER41459.

Debisree Ray
Mississippi State University

Date submitted: 30 Jun 2015 Electronic form version 1.4