

Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

Shell model study of odd-odd nuclei with $N=81$ and their role in astrophysics KENGO OGAWA, HITOSHI NAKADA, Chiba University, TAKEHITO HAYAKAWA, TOSHIYUKI SHIZUMA, Japan Atomic Energy Research Institute, TOSHITAKA KAJINO, National Astronomical Observatory — An odd-odd nucleus ^{138}La is a key nucleus to understand the nucleosynthesis process in supernova explosions since it is considered to be synthesized by neutrino-induced reactions in SNe. We have investigated the structures of the odd-odd $N = 81$ nuclei near ^{138}La theoretically. The observed $J = 1^+$ ground state in ^{140}Pr suggests us the strongly correlated proton wave function, since a configuration $(0g_{7/2})^8(1d_{5/2})_p^1 \times (1d_{3/2})_n$ which is predicted by a simple shell model does not favor the $J = 1^+$ ground state. Therefore by taking into account more general configurations and truncation based on the seniority scheme, we have carried out the shell model calculation and succeeded in reproducing the lowlying level structure of ^{140}Pr . Other results of the calculation will be presented at the meeting. We will also discuss the astrophysical role of ^{138}La .

Kengo Ogawa
Chiba University

Date submitted: 24 May 2005

Electronic form version 1.4