

# Experimental investigation of nuclei in A ~ 50 - 60 region

S. Basu<sup>1,2\*</sup>, G. Mukherjee<sup>1,2</sup>, S. Nandi<sup>1,2</sup>, S. S. Nayak<sup>1</sup>, S. Bhattacharyya<sup>1,2</sup>, Soumik Bhattacharya<sup>1</sup>, S. Dar<sup>1,2</sup>, S. Das<sup>1,2</sup>, S. Basak<sup>1,2</sup>, D. Kumar<sup>1,2</sup>, D. Paul<sup>1,2</sup>, K. Banerjee<sup>1,2</sup>, Pratap Roy<sup>1,2</sup>, S. Manna<sup>1,2</sup>, Samir Kundu<sup>1,2</sup>, T. K. Rana<sup>1,2</sup>, T. Bhattacharjee<sup>1,2</sup>, R. Pandey<sup>1</sup>, S. Samanta<sup>3</sup>, S. Chatterjee<sup>3</sup>, R. Raut3, S. S. Ghugre<sup>3</sup>, H. Pai<sup>4</sup>, A. Karmakar<sup>4</sup>, S. Chattopadhyay<sup>4</sup>, S. Das Gupta<sup>5</sup>, P. Pallav<sup>5</sup>, R. Banik<sup>6</sup>, S. Rajbanshi<sup>7</sup>, Md. A. Asgar<sup>8</sup>, S. Ali<sup>9</sup>, C. Bhattacharya<sup>1,2</sup>

> <sup>1</sup>Variable Energy Cyclotron Centre, 1/AF Bidhan Nagar, Kolkata-700064, INDIA <sup>2</sup>Homi Bhabha National Institute, Training School Complex, Anushaktinagar, Mumbai-400094, INDIA <sup>3</sup>UGC-DAE-CSR , Kolkata, <sup>4</sup>SINP, Kolkata, <sup>5</sup>Victoria Institution, Kolkata, <sup>6</sup>IEM, Kolkata, <sup>7</sup> Presidency University, Kolkata, <sup>8</sup>Pedong College, Kalimpong \*s.basu@vecc.gov.in



## Physics of <sup>54</sup>Mn

1) Odd-Odd nucleus with 3h-1p configuration compared to <sup>56</sup>Ni doubly magic core.

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- **Complex level structure expected due to different** 2) coupling possibilities in f-p shell.
- The excited states would provide crucial information on 3) the residual interaction between protons and neutrons.
- Lower lying non-yrast states are not well known in <sup>54</sup>Mn 4) because it cannot be produced from the decay as <sup>54</sup>Cr

Model

### Octupole Correlation $(\Delta j=3,\Delta l=3)$

## and <sup>54</sup>Fe, both being stable.

Nuclear structure studies using  $\gamma$ -ray spectroscopy method by fusion evaporation reaction with <sup>55</sup>Mn(α, 2p3n)<sup>54</sup>Mn @34MeV



