



Contribution ID: 36

Type: Oral Presentation

Search for Collinear Multi Body Decays of Low Excited Nuclear Systems “An Overview”

Thursday, 12 July 2012 17:30 (2 hours)

Abstract content
 (Max 300 words)

Nuclear fission is commonly known as a process where a heavy nucleus such as Uranium decays into two fragments of roughly equal mass. On occasion instead of a decay into two parts a process known as binary fission, the nucleus can decay into three fragments. In this decay channel known as ternary fission, the nucleus splits into three fragments with the third particle being too light compared to the main fission fragments

Collinear Cluster Tripartition

Some years ago the Flerov Laboratory of Nuclear Reactions (FLNR) at The Joint Institute for Nuclear Research (JINR) while performing experiments at the FOBOS spectrometer observed some unusual structures in the mass mass plots of $^{248}\text{Cm}(sf)$ and $^{252}\text{Cf}(sf)$ with a yield of $\sim 10^{-5}$ - 10^{-6} with respects to binary fission [1]. These observations were treated as indications of a new type of nuclear transformation which later came to be known as Collinear Cluster Tripartition or CCT. CCT is a ternary fission mode where the decay partners fly apart almost collinearly with at least one of them being the magic nucleus [2]. Soon after these observations a number of experiments have been carried by the Flerov Lab in search of the CCT phenomenon. This paper looks at the experimental work done over the years in search of the CCT mode, and highlights some important results of the experiments carried out by the Flerov Lab from the FOBOS setup to the current Light Ions Spectrometer (LIS) experimental setup.

References

1. Yamaletdinov. Studies of exotic decay modes in fission of heavy elements, Jyvasklya, Finland, 19 December 2007.
2. Pyatkov Yu.V. et al., 18th International Seminar on Interaction of Neutrons with Nuclei, Dubna, Russia, 26-29 May 2010.

Apply to be
 consider for a student
 award (Yes / No)?

no

Main supervisor (name and email)
and his / her institution

N.M. Jacobs¹, Yu.V. Pyatkov^{2, 3}, D.V. Kamanin², V.D. Malaza¹
¹Stellenbosch University, Faculty of Military Science, M

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

yes

Primary author: Dr JACOBS, Noel Mkhululi (Stellenbosch University)

Co-authors: Dr KAMANIN, Dmitri (Joint Institute for Nuclear Research, 141980 Dubna, Russia); Mr MALAZA, Vusi (Stellenbosch); Prof. PYATKOV, Yuri (National Nuclear Research University MEPhI, 115409, Moscow, Russia)

Presenter: Dr JACOBS, Noel Mkhululi (Stellenbosch University)

Session Classification: Poster Session

Track Classification: Track B - Nuclear, Particle and Radiation Physics