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The decay scheme development of the decay chain ^{74}Cu→^{74}Zn→^{74}Ga→^{74}Ge using statistically significant $\gamma\gamma$ coincidences method.[1] DURGA SIWAKOTI, UMESH SILWAL[2], JAMES L TRACY, JR.[3], DR. JEFF ALLEN WINGER[4], Mississippi State University — Previous studies of the decay scheme development of the β-decay chain ^{74}Cu→^{74}Zn→^{74}Ga→^{74}Ge was limited due to low production rates for the parent nuclei and low detection efficiencies. In this current HRIBF experiment, nearly pure beam of ^{74}Cu was used to study the decay chain using LeRIBSS setup where even low intensity γ-ray could be detected. The decay schemes were developed from the $\gamma\gamma$ and $\beta\gamma$ Coincidence data obtained from the experiment taken in the energy range 20-5200 keV and compared to existing data at the National Nuclear Database Center (NNDC). For energy gated $\gamma\gamma$ spectra, possible peaks were fitted to a standard Gaussian function to determine the relevant peak area on both peak gate and an adjacent background gate to enable us to identify the statistically significant peaks. By this careful analysis, we have established new transition lines and energy levels for all three daughter nuclei and also readjusted some previously placed transitions due to better understanding of the $\gamma\gamma$ relationships.

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[2]Research colleague
[3]Research colleague
[4]Professor and Adviser for this research project.

Durga Siwakoti
Mississippi State University

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