

Abstract Submitted
for the SES21 Meeting of
The American Physical Society

Detection Of Natural Radiation In Soils Near The Mississippi River By $\gamma\gamma$ -Coincidence Spectroscopy PRANJAL SINGH, DANIEL VALMASSEI, ANTHONY KUCHERA, Davidson College, BEN CRIDER, Mississippi State University — Many external factors like climate, geography, wind and water currents have a great influence on the accumulation of naturally radioactive minerals around the world. Mostly present in soil, humans get exposed to natural radiation daily. This exposure only increases on lands classified as High Background Radiation Areas (HBRAs). Nile River, one of these HBRAs, has previously been investigated and confirmed for the presence of minerals rich in U and Th from Monazite minerals, with some locations having higher concentrations of radionuclides than accepted internationally.^[1] One of the similarities between the Nile and the Mississippi River Delta includes that they are both undergoing erosion. The discussed work is an exploration of monazite in the Great River Road State Park, near the Mississippi River. The samples were measured with a low-background NaI(Tl) spectrometer and a digital data acquisition system. $\gamma\gamma$ -Coincidence spectroscopy was used to reduce background; applying coincidence conditions of known gamma-ray energies from ^{238}U and ^{232}Th decay chains enabled us to identify the presence of natural radiation. These results indicate the presence of minerals containing ^{238}U and ^{232}Th near the river. ^[1] Mubarak, Fawzia, et al. Scientific Reports, vol. 7, no. 1, 2017.

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Date submitted: 29 Sep 2021

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