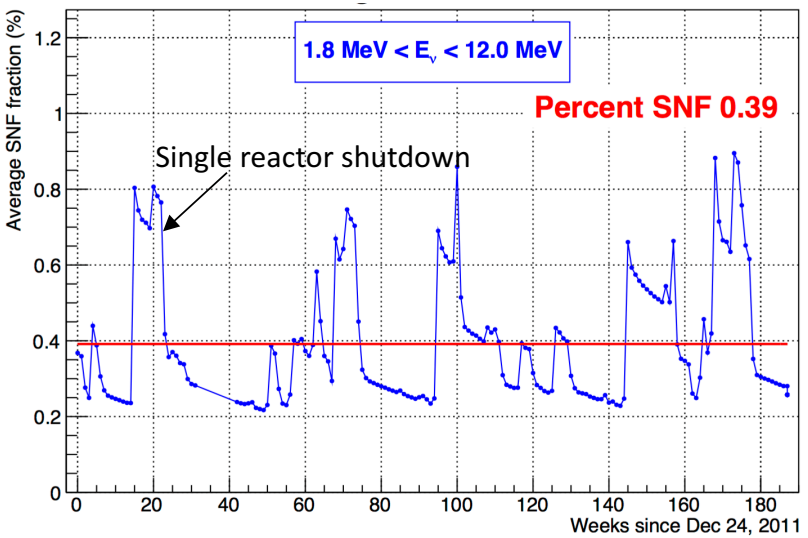
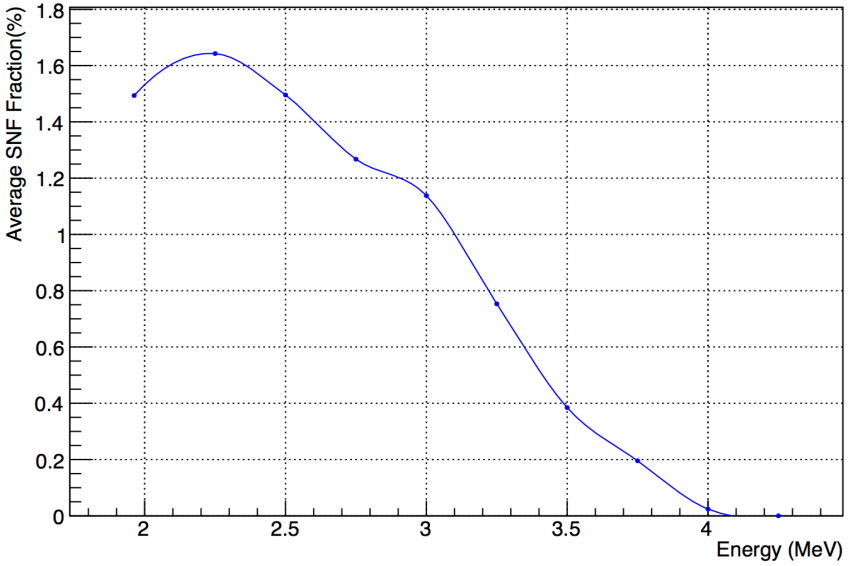
Contribution of spent nuclear fuel (SNF)

- SNF stored in pools close to reactors contribute to measured $\bar{\nu}_e$ flux
- Most isotopes in SNF decay quickly in minutes/hours after reactor shutdown
- Few isotopes persist months/years
- Plot to right shows calculated fractional flux contribution to Daya Bay from SNF over ~4 years of operation

SNF Average Fractional Contribution to $\bar{\nu}_e$ Flux



SNF Average Fractional Spectrum over P15A Data Set



- SNF distorts low-energy $\bar{\nu}_e$-spectrum
- Falls off to zero above 4 MeV
- Spectrum to left shows calculated contribution to Daya Bay $\bar{\nu}_e$-spectrum over the P15A dataset (~4 yr)

SNF was found to not significantly contribute to the evolution of reactor flux and spectrum with burnup

https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.118.251801