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Opportunities With Decay-At-Rest Neutrinos From Decay-In-Flight Neutrino Beams (15' + 5')

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Neutrino beam facilities, like spallation neutron facilities, produce copious quantities of neutrinos from the decay at rest of mesons and muons. The viability of decay-in-flight neutrino beams as sites for decay-at-rest neutrino studies has been investigated by calculating expected low-energy neutrino fluxes from the existing Fermilab NuMI beam facility. Decay-at-rest neutrino production in NuMI is found to be roughly equivalent per megawatt to that of spallation facilities, and is concentrated in the facility's target hall and beam stop regions. The physics implications and experimental challenges of decay-at-rest neutrino measurements near the target hall are discussed, along with prospects for measurements at facilities along a future Fermilab long-baseline neutrino beam.

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