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Heavy Element Synthesis in the Outflow from Black Hole Accretion Disks REBECCA SURMAN, SEAN KANE, CRYSTAL SMITH, Union College — The r process, the rapid neutron capture nucleosynthesis process responsible for half of the elements heavier than iron, is thought to occur in core-collapse supernovae, though the exact site and mechanism is still uncertain. Here we examine an alternate site - the outflows from a very rapidly accreting disk around a stellar mass black hole. We begin with analytic models of black hole accretion disks and use a parameterized outflow to follow the ejected material. We show that neutron capture nucleosynthesis is possible in a wide range of trajectories from very rapidly accreting disks, and that in all cases the neutrino flux emitted from the disk strongly influences the resulting nucleosynthesis.

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