Abstract Submitted for the DNP07 Meeting of The American Physical Society

The production of light *p*-process nuclei in the outflows from gamma-ray burst accretion disks CRYSTAL SMITH, Union College — Elements created through *p*-process nucleosynthesis are some of the rarest in the universe. Here we examined the outflows from gamma ray burst accretion disks as a possible site for the production of some light p-process nuclei. We began by using a calculated model of a black hole accretion disk with a mass accretion rate of one solar mass per second, then using a parameterized outflow model we calculated isotropic abundances for various outflow trajectories. We then examined overproduction values for several light p-process nuclei. We found two regions in our parameter space which showed significant overproduction of some of these nuclei. The electron fraction in the outflow material was between 0.4 and 0.5 in the first region of overproduction and over 0.6 in the second region. In the latter, we find that production is aided by neutrino reactions on free nucleons. Our study indicates that outflows from gamma ray burst accretion disks are a promising site for the synthesis of some light p-process nuclei, and that neutrino interactions can play an important role in this nucleosynthesis.

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Date submitted: 01 Aug 2007

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