**Proposal # PR12-12-006** **Hall: A**

**Title:**  Near-Threshold Electroproduction of J/at 11 GeV

**Contact person:** Zein-Eddine Meziani (Temple U)

**Beam time:**

Beam days requested: 60 days

Set-up time included in request: 10 days

**Beam parameters:**

Energy: 2.2, 4.4, 11 GeV

Current: mostly at 3 A, some runs at 10 and 30A

Polarization: no

**Targets:**

15 cm liquid H2

**Spectrometers:**

SoLID (SIDIS configuration)

**Special requirements:**

SoLID spectrometer modifications

Removal of flow diverter from cryotarget system

**Comments:**

1. General comment about the SOLID spectrometer: This is a new apparatus, involving a large solenoidal magnet and a suite of detectors and associated hardware. It will need to undergo a Director’s Review before becoming an approved project. The detectors push the rate capability of detector and DAQ technologies. The specification of the apparatus is rapidly changing, which makes evaluation of technical merits difficult. The experimenters should estimate the time needed to put the experiment on the floor and to remove it for other experiments that don’t use SOLID.
2. The present proposal is a good demonstration of how the SOLID spectrometer is not yet a standard setup, because this proposal requires modifications to the yolk and larger GEMS (see below), and it is not clear if this is compatible with the rest of the SOLID program.

**Technical Comments:**

1. All technical concerns regarding detectors and spectrometer magnet that affect the SoLID-SIDIS series of experiments also apply to this experiment. The experiment is a “standard SoLID-SIDIS” setup, but this setup will need to undergo a technical review before being fully approved. SoLID is a new device that pushes the rate capability of relatively new detector and DAQ technologies. The overhead of moving SoLID in and out of the hall between runs of other experiments should be given careful consideration as well.
2. The proposed enlargement of the spectrometer front yoke may be labor-intensive and costly. Additionally, the modification will affect the field and background conditions inside the spectrometer at least somewhat. At some point, these effects should be quantified. Would other experiments in the SoLID program be able to run with the modified yoke? If so, it might be the most sensible approach to build the SoLID magnet with this larger yoke opening to begin with.
3. The TAC notes that the 1.1 GeV energy needed for 3 days is a non-standard energy.
4. The proposed increase of the outer radius of first three GEM tracker layers by 10 cm is not trivial and potentially costly. Additional chambers would have to be built to cover the extra outer area, the existing chambers would have to be completely replaced by larger ones, or larger chambers would have to be installed to begin with. Would the latter option be a possibility, that is, would other SoLID experiments be compatible with larger front GEMs? If so, that would seem like the most sensible option. If additional chambers were to be installed later, they would also require additional electronics with a relatively high channel count and therefore high cost.
5. The proposal does a good job of identifying the main backgrounds and the main uncertainties in the cross section.