Generic Detector R&D for an EIC

FY16 summary for JLab-related institutions

Program at July 2015 meeting

Agenda: EIC Generic Detector R&D Advisory Committee

	Thursday	
9:10	**Welcome and Overview**	**Thomas Ullrich, BNL**
9:25	*eRD4: DIRCbased PID for the EIC Central Detector (Progress Report)*	**Charles Hyde, ODU**
9:45	*eRD10: R&D for (Sub) 10 Picosecond Timing Detectors at the EIC (Progress Report)*	**Mickey Chiu, BNL**
10:05	*eRD11: RICH detector for the EIC'S forward region particle identification - Simulations & Characterization of LAPPD 6x6 cm2 sample #28 (Progress Report)*	**Hubert van Hecke, LANL**
10:25	Coffee Break (20 min)	
10:45	**PID Consortium: Proposal for an integrated program of Particle Identification (PID) challenges and opportunities for a future EIC (Proposal)**	**Pawel Nadel-Turonski, JLab**
11:25	**A proposal for Compton Electron Detector R&D (Proposal)**	**Alexandre Camsonne, JLab**
11:55	**DPMJetHybrid 2.0: A Tool to Refine Detector Requirements for eA Collisions in the Nuclear Shadowing / Saturation Regime (Proposal)**	**Mark Baker**
12:20	Lunch Break (Committee working lunch in Building 490, Large Conference Room B)	
14:15	**Forward/Backward Tracking at EIC using MAPS Detectors (Proposal)**	**Ernst Sichterman, LBNL**
14:45	**eRD2: A Compact Magnetic Field Cloaking Device (Proposal)**	**Abhay Deshpande, Stony Brook**
15:15	Coffee Break (20 min)	
15:35	**eRD1; Status Report and Proposal for EIC Calorimeter Development (Progress Report and Proposal)**	**Oleg Tsai, UCLA, Xiaochao Zheng, UVa**
16:15	Adjourn to Executive Session	
16:25	Committee: Executive Session (Building 490, Large Conference Room B)	
19:00	Dinner in Berkner (committee and presenters are invited)	
	Friday	
9:10	**eRD3: Design and assembly of fast and lightweight barrel and forward tracking prototype systems for an EIC (Progress Report & Proposal)**	**Bernd Surrow, Temple University**
9:40	**eRD6: Tracking/PID Consortium (Progress Report and Proposal)**	**Tom Hemmick, Stony Brook**
10:20	Coffee Break (20 min)	
10:40	**eRD12: Polarimeter, Luminosity Monitor and Low Q2-Tagger for Electron Beam (Progress Report and Proposal)**	**Richard Petti, BNL**

FY16 funding priorities (from report)

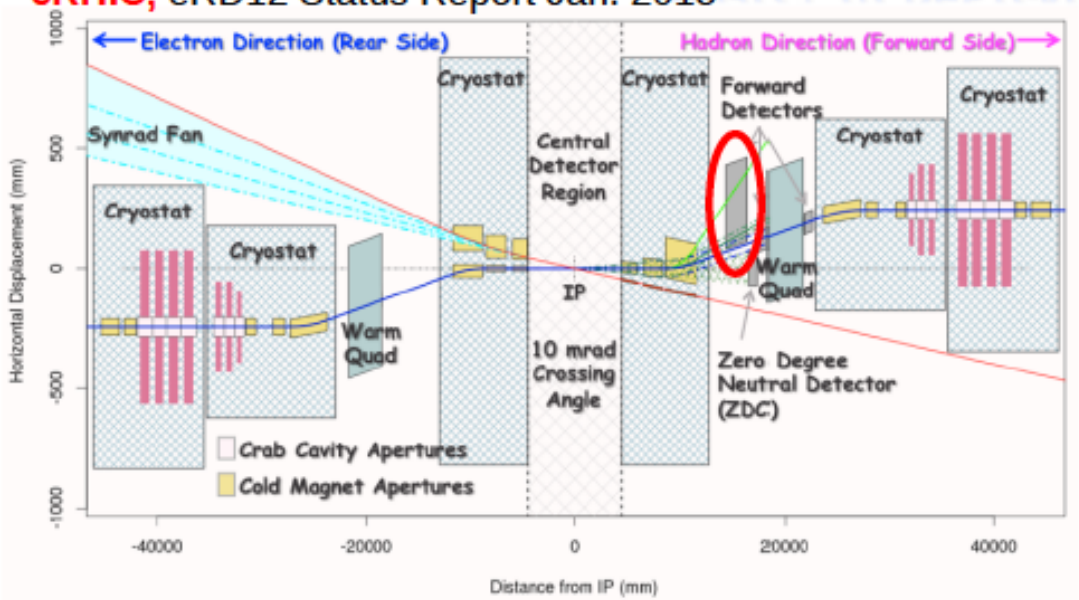
	Alexandre Camsonne	A proposal for Compton Electron Detector R&D		
			Simulation leading to design of polarimeter	**High**
			Chamber construction / electronics	**Medium**
	Mark Baker	DPMJetHybrid 2.0: A Tool to Refine Detector Requirements for eA Collisions in the Nuclear Shadowing / Saturation Regime		
			Simplified model and testing	**High**
			Full model and testing	**Medium**
	Barbara Jacak	Forward/Backward Tracking at EIC using MAPS Detectors		
			Simulations (+travel)	**High**
			MAPS R&D and cables	**Low**
eRD1	Huan Huang Craig Woody	Status Report and Proposal For EIC Calorimeter Development		
			W/ScinFiber Calorimeter	**High**
			SiPM Test and Simulation	**Medium**
			PWO Development	**Medium/Low**
			Shashlyk Calorimeter	**Medium**
eRD2	Abhay Deshpande	A Compact Magnetic Field Cloaking Device		
			BNL Magnet Division	**Outside funding**
			Cloaking R&D Program	**High**
eRD3	Bernd Surrow	Design and assembly of fast and lightweight barrel and forward tracking prototype systems for an EIC		
			NRE TechEtch	**Low**
			Postdoc + travel	**High**
			Materials: foils + CCD scanner	**Medium**
			MM Readout	**Low**
eRD6	Klaus Dehmelt	RD6 Tracking/PID Consortium: Progress Report & Funding Request		
			Postdoc at FIT	**High**
			CERN GEM Support at FIT	**High**
			CERN GEM Support at UVA	**High**
			Joint effort GEMs (NRE)	**Low**
			Continuing TPC efforts (BNL)	**Medium**
			Continuing RICH efforts (Stony Brook)	**Low**
eRD12	Elke Aschenauer	Polarimeter, Luminosity Monitor and Low Q2-Tagger for Electron Beam		**High**
PID Consortium	P.NadelTuronski, M.Chiu, H.van Hecke, Carl Zorn	Proposal for an integrated program of Particle Identification (PID) challenges and opportunities for a future Electron Ion Collider (EIC)		
		eRD10 (Mickey Chiu, Matthias Grosse-Perdekamp)	(Sub) 10 Picosecond TOF Timing Detectors at the EIC	**High**
		eRD11 (Hubert van Hecke, Carl Zorn)	RICH detector for the EIC'S forward region particle identification - Simulations	**Medium**
		eRD4 (Pavel Nadel-Turonski)	DIRCbased PID for the EIC Central Detector	**High**
		eRD11 (Carl Zorn)	Characterization of LAPPD 6x6 cm2	**Medium**

FY16 funding for JLab user institutions

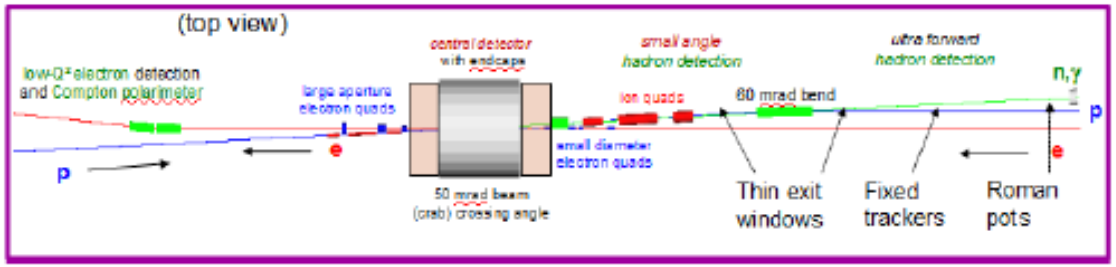
- eRD14 – PID Consortium
  - $8k CUA *[high-B]*
  - $2k Duke *[RICH*]
  - $46k INFN (through JLab) *[RICH]*
  - $29k JLab (and GSI) *[DIRC and high-B including LAPPDs]*
  - $55k ODU *[DIRC & high-B]*
  - $17k USC *[high-B]*
  - $5k UTFSM (through JLab) *[LAPPDs*]
- eRD15 – A proposal for Compton Electron Detector R&D
  - $54k for JLab and U. Manitoba
- eRD1 – Calorimetry Consortium
  - Limited or no funding for PWO (CUA) and Shashlyk (UVA)
- eRD3 – GEMs and micromegas
  - Unknown funding for Saclay
- eRD6 – Tracking consortium
  - Unknown funding for UVA

JLab and BNL IR comparison

eRHIC, eRD12 Status Report Jan. 2015



MEIC, Morotov et al. High Energy Nuclear Physics with Spectator Tagging Workshop, March 2014



eRHIC – Studies of eAu centrality tagging using the single-struck-nucleon DPMJet model.
Conclusion so far: forward protons not needed!

MEIC – Goal: near hermetic acceptance for all nuclear fragments in heavy eA. Physics advantage? **To Be Determined.**

Both designs can tag forward p or n in polarized e ^{3}He.

Do we need good forward proton acceptance in eA?

May be important, but... WE DON'T KNOW!!!

09-July-2015 MDB - Forward Detector Optimization 15

- From Mark D. Baker's proposal presentation