

# MOLLER Tasks List

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Subsystem	Task	Description	Comments
<b>Target</b>	Window design	Optimization of wall thickness, mechanics	Silviu working on it
<b>Target/ Tracking</b>	Solid Targets	Determine the list of solid targets based on various physics requirements	David A. and Seamus to lead a group to study this?
<b>Target/ Simulation</b>	O-ring radiation load	Determine neutron and EM flux at clamshell O-ring	Simulation task: Rakitha
<b>Spectrometer</b>	Tolerance analysis	Based on physics requirements to control systematics	Juliette working on it
<b>Spectrometer /Simulation</b>	Material Irradiation/Activation	Quantify radiation load and activation of primary components	Juliette will tabulate materials to be evaluated by Rakitha?
<b>Spectrometer /Simulation</b>	Radiation load on hybrid toroid nose	More careful evaluation of local radiation load to determine survival of epoxy	Rakitha to evaluate and hand result to MIT for epoxy evaluation?
<b>Spectrometer</b>	Impact of environmental variations	Evaluate potential variation in performance and impact on physics requirements over time	Juliette and MIT to strategize and evaluate?
<b>Spectrometer /General</b>	Floor loading	Map of floor loading to evaluate possible impact on physics performance	MIT to collaborate with JLab engineering?
<b>Simulation/ General</b>	Radiation impact	Irradiation from moves in and out of the beamline and during storage	Need to develop well-defined task sequence?
<b>Pion/ Simulation</b>	Muon pair production	Muon pair production might be significant for pion detector	Wouter is working on it
<b>Pion/ Simulation</b>	Beam dump background impact	beamdump backgrounds may affect some detectors	Pion group is looking at impact on pion detector
<b>Simulation</b>	PMT double-differences	Using Qweak experience, evaluate upper limit to possible systematic from A_T in thin quartz and shower-max	UVa group has agreed to work on this over the next few months
<b>Detectors</b>	Main detector geometries	Optimize the ring radial and azimuthal dimensions to optimize background asymmetry correction determination and systematic	UVa group has agreed to work on this over the next few months
<b>Detectors/ Simulation</b>	Shower-max splashback	Estimate possible background in main detector PMTs from shower-max splashback	SBU undergraduate and graduate students will work on this in the Fall
<b>Detectors/ Simulation</b>	PMT backgrounds	A comprehensive estimate of all backgrounds at the main detector PMTs	Manitoba and SBU to improve these estimates over the Fall
<b>Detectors/ Simulation</b>	Detector Shielding Optimization	Figure out the configuration of heavy-Z and light-Z shielding	SBU will work on this after shielding geometry

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		required in front of and around the PMTs to minimize soft background	optimization is complete
<b>Detectors/ Simulation</b>	Slit scattering background	A comprehensive note summarizing the elimination of all 1-bounce sources and the leading 2-bounce sources	To be assigned once further progress is made on other background tasks?
<b>Detectors/ Simulation</b>	Crosstalk evaluation	Evaluate impact on specific detector measurements of background from other detectors	Main source is lightguide background from primary flux. SBU undergraduate project
<b>Tracking/ General</b>	Downstream beamline and supports	Mechanical design of downstream beamline satisfying physics requirements	Sandesh (designer) working on it, important input for 1-bounce evaluation
<b>Polarized Beam/ Detectors</b>	Large Angle Monitors	Based on Qweak experience, devise locations for monitoring background asymmetries	Mark has agreed to run a taskforce for this
<b>Detectors</b>	Main detector mechanical assembly	Engineering design of lightweight support structure to hold main integrating detectors	Enquire with SU if engineer Lou Buda is available?
<b>Detectors</b>	Radiation hardness of detector components	Investigate which detector components need radiation testing and carry out 50 MRad test	Michael and Dustin devise a plan?
<b>Detectors</b>	QC plan for main detector quartz	Devise plan to evaluate robustness of main detector quartz	Michael and Dustin to devise a plan?
<b>Polarized Beam/ Monitoring</b>	Beam dispersion	Is dispersion on target a problem for the design?	Mark and Kent to understand question and strategize?
<b>General</b>	Staged running plan	Strategy for multiple year runs with assembly/disassembly	KK, Mark and Kent will review plan
<b>General/ Spectrometer</b>	Fringe field impact	Evaluate possible background from fringe fields in the primary beam path	Juliette working on this, will involve Jay when appropriate
<b>General</b>	2-loop theory calculation	Evaluate systematic error in theory prediction	KK to work with theorists to evaluate status and plan
<b>General/ Simulation</b>	Radiative corrections for all physics processes	Incorporate radiative corrections for e-e and inelastic e-p scattering	Seamus and Yury to devise a plan of action
<b>Simulation/ Pion</b>	Hyperon background estimation	Strategy to evaluate the hyperon background using the full suite of detectors	Pion and simulation groups should coordinate this task
<b>Tracking/ General</b>	Mechanics of GEM tracker assembly	Engineering input for GEM "wheel" and rotation assembly and remote control	Will need engineering/designer input, KK to chase
<b>Simulation/ Tracking</b>	Optics Collimator for Q2	Simulated Q2 analysis and the use of tracking and special collimation	David and Seamus should devise a plan, building on Rupesh's work

→ **Persons to track tasks:**

Target: Silviu, Spectrometer: Juliette, Simulations: Dustin/Seamus/Rakitha, Detectors: Michael,  
Tracking: David/Seamus, Pion: David, Polarized Beam: Kent, Monitoring: Mark, General:  
KK/Mark