DarkLight @ ARIEL Installation

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DarkLight@ARIEL Collaboration Meeting

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Infrastruture - Can be done in advance

Electronics Hut

- power, network, phone, interlock
- racks with crates, computers, table and chairs (could be outside hut)
- cable electronics, network, and test
- lay cables in cable tray with coil ends near the experiment out of the way

Counting Room

- tables, desks, chairs
- network drops, phone
- computers, monitors

Infrastruture - Can be done in advance

Connections for the Experiment

- power outlets, telephone, interlock
- gas and gas manifold on north wall
- water supply and return on north wall
- cables for magnet power to the roof
- cables for ion pump, vacuum gauges to the roof
- cables for Hall probes
- cameras

Installation of Main Components

Preparation

- assume all components are available, cable tray installed, wall crane available
- cables from hut or roof, water and gas lines can be preinstalled but not in the way
- assume necessary manpower is present MIT and TRIUMF

Scattering Chamber

- roughly install and align scattering chamber support
- install scattering chamber on 6-strut system
- survey and align position (relative to dipole crossover?), 0°, beam height, level
- lock 6-strut system and grout support system to floor
- connect upstream beamline to dipole beamline flange
- install target system
- install ion pump, neg pump, and vacuum gauges, cable ion pump and vacuum gauges
- install shielding and secure

Installation of Main Components

Spectrometer Magnets

- roughly install and align magnet support tables
- install magnets on 6-strut system
- survey and align position, 20° or 36°, level, target to collimator distance (Important)
- lock 6-strut system and grout support system to floor
- connect spectrometer beamline to scattering chamber flange

Detectors and Shielding

- roughly install and align support tables and detector supports
- install detector package and Hall probes
- survey and align position of detectors, trigger distribution card
- grout support table to floor
- install radiation shielding

Installation of Main Components

Beamline

- roughly install beamline supports
- install beamline with low energy permanent magnet quadrupole configuration
- connect beamline to scattering chamber flange
- connect beamline to beamline through EM quadrupoles and beam dump
- survey and align position, 0°, beam height, level

Vacuum

- connect vacuum gauge cables
- start roughing pump on pump station, monitor vacuum gauges
- start turbo pump on pump station, monitor vacuum
- connect ion pump cables to ion pump controller, start ion pump

Cabling of Main Components

Scattering Chamber

- cable target system controller, test (maybe test earlier for vacuum issues)
- install optical camera and infrared camera, test

Spectrometer Magnets

- connect magnet power cables and water cooling, test
- connect Hall probes, test

Detectors

- connect local GEM cables (HDMI, HV, LV) to cables in cable tray
- connect trigger scintillator cables to distribution boards and to cables in cable tray

Declare victory