



# Future Work Plan, Action Items, Future Meetings

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# AD&I Actions

A number of actions were placed upon us at the previous meeting

P source	13	Explore parameter options for end-of-linac operation (as a function of energy) for the following scenarios: yield of 2 at 250GeV; yield of 1.5 at 150 GeV; QWT and Flux Concentrator and/or Li lens options.	Clarke	
	14	Produce comprehensive target shielding curves (rate vs concrete shielding thickness) for above schemes	Clarke	
	15	Supply envelope dimensions ("box") for target and capture station	Clarke	
	16	Compile review of existing beam dynamics simulations (emittance preservation)	Clarke	
	17	Compile available documentation on target engineering solution	Clarke	
	18	300 Hz source - prepare exact comparison charts for planned R&D tests	Omori, Urakawa	Planned R&D at ATF
	19	300 Hz source - Identify scope and resources required for integrated design work	Clarke, Omori	Begin planning for a more integrated source design.



## Actions from Durham Workshop

- Actions were placed on many groups at the Durham Workshop (Oct 2009)
  - Short Term (**Jan 2010**)
  - Medium Term (**April 2010**)
  - Longer Term (end 2010)
  - **General comments/outstanding items**
- Not every action was assigned due to lack of resources



# Undulator

- “Real” Undulator spectrums required for modelling of source – David
- Impact of angular errors inside undulators – spot size on target, polarisation loss? – ANL
- Real kicks in undulator to ANL - RAL
- Complete 4m cryomodule & test (fix heat load problem!) – Owen
- Alignment requirements justified/jitter studies/impact on polarisation – Duncan
- Generate beam test plan – Jim
- Horizontal magnet measurements required at some stage
- Electron beam tests required at some stage
- Modules need to be engineered for large scale production and operation
- Intermodule connections need engineering
- Store cryomodule safely so can be powered at a later date



# Source Modelling

- Use real spectrum in PPS-Sim – Mike/Ian (assistance from DESY?)
- Low K option at 250GeV to increase polarisation – ANL
- Look at PTRAN losses in ANL simulations – Wei
- Use of spent beam for undulator - ANL
- Ongoing list of current simulation codes and objectives + input files – Ian
- Ongoing yield/polarisation evaluation with source design evolution (Wei)



# Compton

- Continue DR stacking studies and work with DR group to ensure optimum solution - Frank
- cavity stability tests (LAL/KEK) - Omori
- Laser demonstration – Fabian Zomer, Vitaly
- ATF demo – Omori
- 2010/11 demo with new cavity of high gamma flux at ATF



# Polarisation

- Study performance of spin rotator design, jitter effects etc (5GeV)
- Polarisation change with collimator aperture/beam position jitter
- Study performance of spin rotator design, jitter effects etc (0.4GeV)
- Spin flip using pulsed solenoids - Jim
- Close contact with IP group polarimeter (Tony)
- Ensure spin survives to DR
- Close contact with simulations group – spin track to IP
- Confirm investigation showing we can destroy polarisation in DR completely
- Electron spin survival within undulator – Des



# Collimation

- Pick a collimator design and tell everyone to use it – Lei/Ian/Alexander
- High power photon collimator needs to be studied
- Positron collimation – design documented, needs updating as source evolves
- Variable aperture collimator needed for polarisation upgrade?
- (Electron collimation before undulator – BDS group?)





# Target

- Complete Eddy current tests at Daresbury – Ian
- Store target properly – Ian/Jim
- Generate simulations to compare with experimental results – Jeff/Tom
- Measuring conductivity of target material - Lancaster
- Pressure shock wave analysis – Stephan (next meeting) and numerical modelling later
- Energy compression before DR to be studied to improve yield – Wan Ming
- RIA Ferrofluidic seal study information – Jeff
- Vacuum seal & water union tests – LLNL
- Ferrofluid radiation tests
- Beam tests on Ti samples (~100J/g) – ANL/LLNL/DESY to check what beam is suitable
- Lifetime studies of target (LLNL)
- Alternative liquid metal & window (BINP/KEK tests) – Junji
- Joint target for auxiliary (500MeV, 1% bunch intensity) & und source (3 X0 and 0.4 X0 or just 0.4X0?) – ANL/DESY
- Check and compare alternative target materials (W or Ti) – ANL/Alexander
- Engineered solution, including prototype tests – water, vacuum, ...



# OMD

- Li Lens - Cornell
  - Evaluate level of radiation damage in window & implications for lifetime
  - Stress-strain in window with liquid flow
  - Thermal cycling fatigue
  - Cavitation wear on windows
  - Proton beam tests?
  - Contact experienced Li lens experts to discuss this idea (Jerry Dugan) – Marc to provide feedback
  - KEKB BN window tests (liquid lead target)
  - Discuss with M Harrison (solid/liquid?)
  - Concern with liquid Li containment in steel (Pavel)
- Flux Concentrator
  - Continue parametric studies & complete conceptual design – LLNL
  - Build prototype



# Remote Handling

- Use detailed target, RF, etc model in Fluka – Andriy
- Send CAD model to DESY for RH items – Norbert
- Can RH be accessed when target removed? – Andriy
- RH scenarios refined
  - **Changeover times (requirement ties in with lifetime of kit in RH)**
  - **Replacement of pillow seals?**
- Pillow seals need R&D
- Need engineered design compatible with source layout (remove inconsistencies!)
- If yield increases then RH not needed (limited only?)



# Integration

- Understand timing issues for ILC, work with DR group to look at options – Jim/Andy W
- SB2009/AD&I/MM integration ongoing with BDS etc - Norbert



## EDMS work package

- Report back on EDMS status – ongoing action Ian/Lars
- Setup Wiki – DESY



## Auxiliary Source

- Is electron beam dump ok for AS?
- How to separate electron drive beam?
- Where do particles get lost?



## Others

- Risk Register updated - Jim
- New baseline document – Jim



## Future Meetings

- Proposal by Louis to have joint ILC/CLIC positron source meeting
  - **Probably ~Mar/Apr 2010**
  - **Probably CERN or Daresbury**
- General agreement that this is a good idea, no one opposed the idea





# Thanks !

- Thanks to Gudi, Stefan and Linda for organising the workshop !!!

