

# Plans for ATF2 Laser-Wire

## Installation Issues and Schedule

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On behalf of the UK Laser-wire collaboration

# Two stage approach to Laser-wire for ATF2

- Stage 1
  - Re-commission existing ATF system in new location
    - Continue current research programme aimed at micron-scale laser spot size
- Stage 2
  - Develop new ideas at additional laser-wire station(s)
    - Multiple axes
    - Incorporate 'wire-scanner' into Laser-wire chamber
    - Roll angle adjustment
    - Emitence measurements
    - Move towards detailed ILC engineering specification...

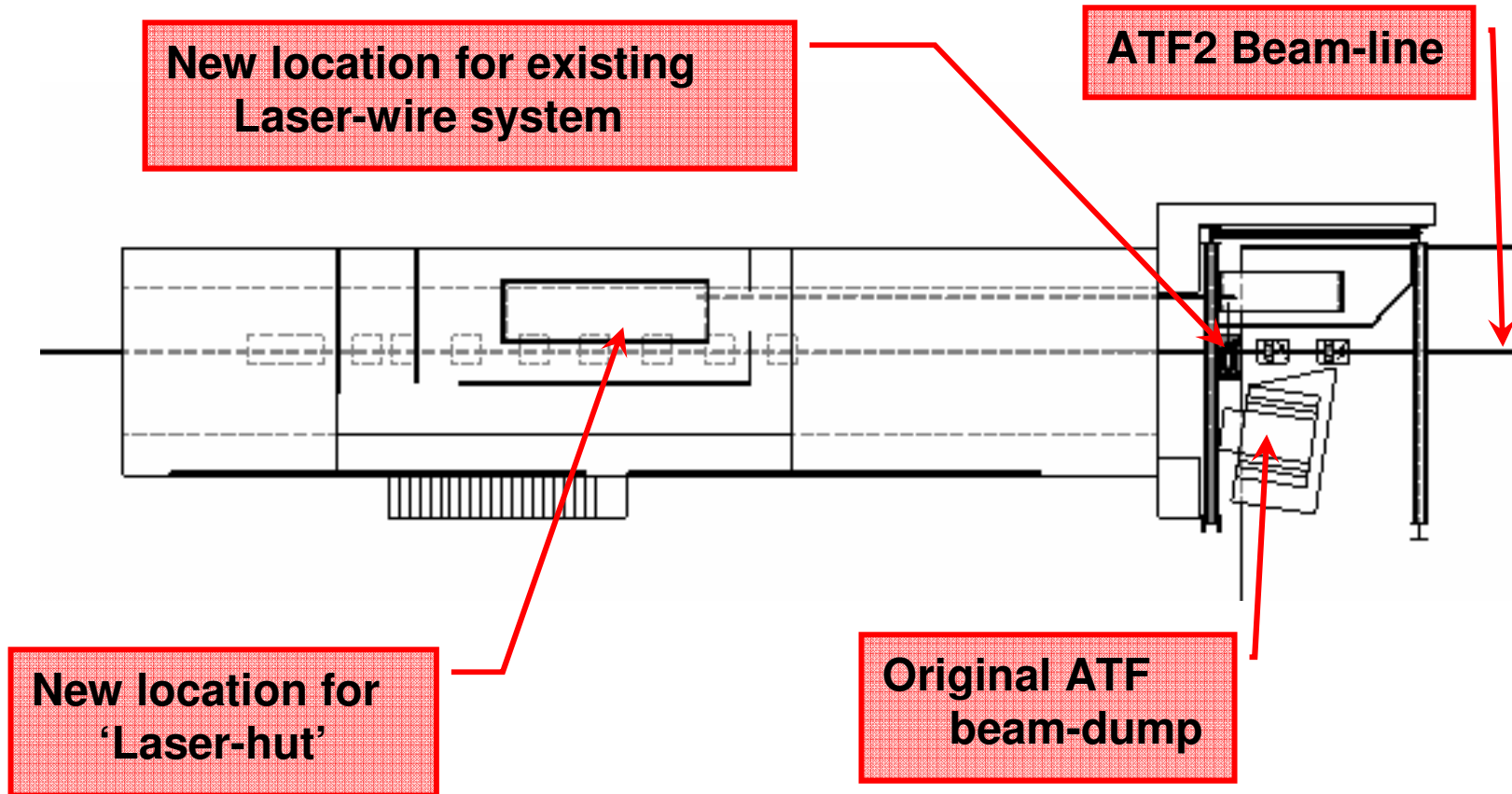
# Stage 1

## Re-commission existing ATF system in new location

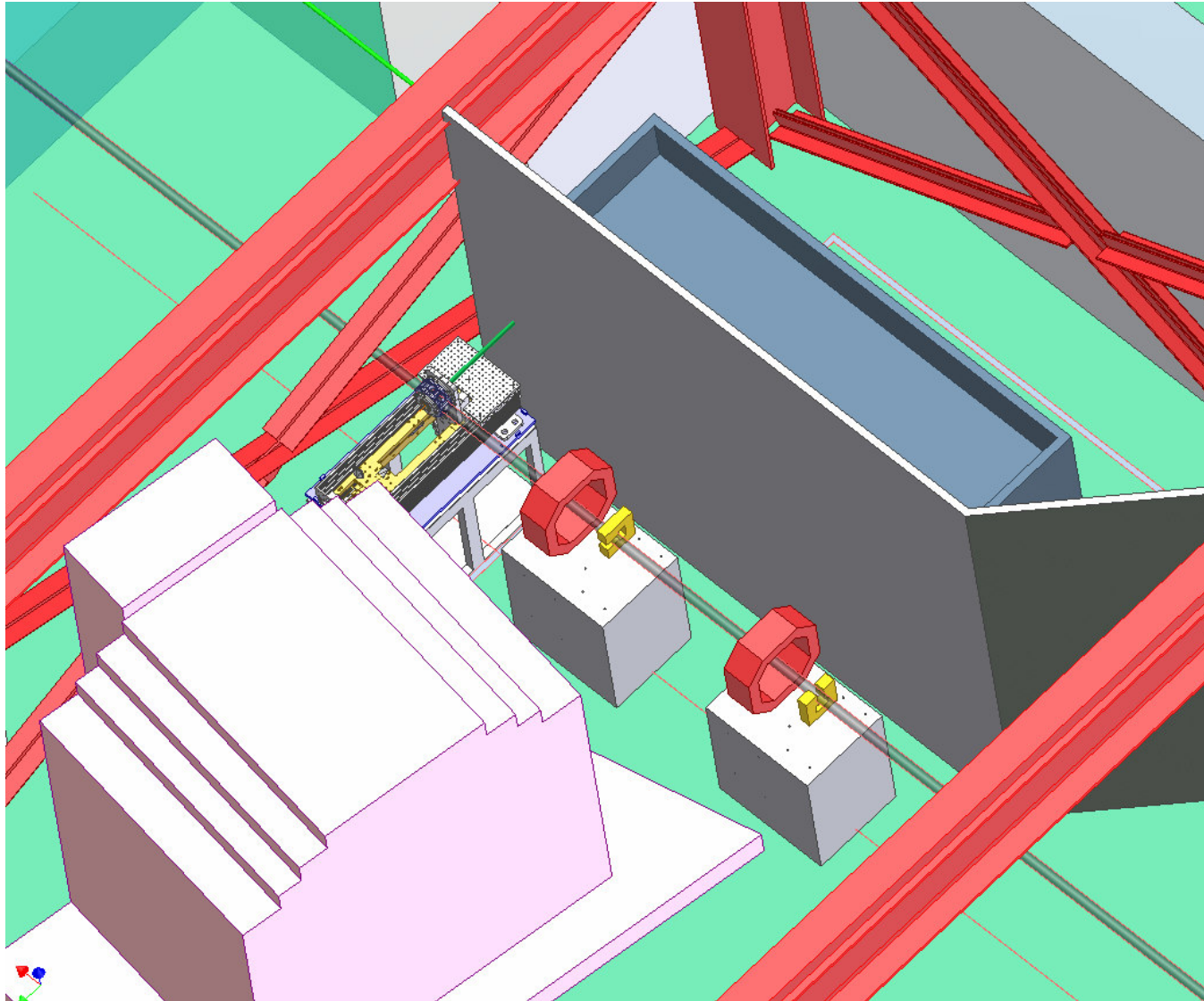
- Requires
  - New 'Laser hut' (over ATF2 beam-line)
  - Relocation of existing optical table in DR Hall
  - New laser delivery system
  - New gamma exit 'window' in beam-pipe
  - New detector location (supports, etc.)
  - New service connections
- This represents a significant work package

# Stage 1 (continued)

## Plan View of proposed new 'Laser-wire' region



Stage 1 (continued) - 3D View of proposed new 'Laser-wire' region



# New Laser Hut - Requirements

- Dimensions – Approximately 11.5m x 4.5m
  - needs to incorporate a larger optical table than in preset hut
- Local power distribution board – max load to be defined
- Cooling water system – max heat load to be defined
- Separate semi-clean area for laser table (inside the hut)
  - Environmental controls – to be defined
    - Temperature stability and humidity is very important for reliable laser operation!
  - Semi-clean assembly bench and storage cabinets for optics
- Separate area for electronics racks
  - to minimize heat load on laser
- Separate area for HV laser electronics
  - to minimize electrical interference and heat load on laser
- Laser safety interlocks and controls need to be defined?

# Laser light transport – proposed scheme

- Laser light to be distributed inside pipes
  - For reasons of laser safety and stability
  - Possibly evacuated (to reduce fluctuations in refractive index)
- Approximate diameter 100mm
- Mounted close to the wall, alongside the accelerator, at beam-line height
- Support bases for mirrors and relay lenses at intervals of several metres

# Proposed Schedule for Stage One

Exact details to be agreed with ATF2 management

1. Jan 2008 - Finalize specifications of new laser hut
2. March 2008 - Construct new laser hut
3. April/May 2008 - Install new optical table into new laser hut
4. April/May 2008 - Install services (power, air-conditioning and water cooling)
5. End May 2008 - Move laser system into new laser hut
6. Early June 2008 - Clear existing laser hut
7. Early June 2008 - Move existing laser-wire station from beam-line to safe storage
8. Early June 2008 - Move existing optical table adjacent to beam-line
9. Autumn 2008? - Install new light transport system
10. Autumn 2008? - Install detectors for Compton photons in ATF2
11. Winter 2008? - Re-commission existing laser-wire station in ATF2 beam-line