

# SiD Introduction and Plans LCWS 2015



Andy White  
University of Texas at  
Arlington  
for the SiD Consortium

# SiD/ILC Status

- The ILC project has been endorsed (EU Strategy, ACFA, Snowmass, P5) as a major future HEP project – indeed the **only one** anywhere near reality – e.g. talk at DPF2015 by DoE
- We have an accelerator design that will deliver the required luminosity – at a range of energies.
- We have **plausible running scenarios** to address the range of ILC physics (Jim Brau's Working Group, e.g. H20 scenario)
- **We have a SiD detector design that can deliver the physics** ( at least at the level studied for the DBD) but is still being improved/optimized

# ALCW 2015 and the “Tokyo Event”

## April 2015

1. The ILC's role in particle physics is to explore with exquisite detail the fundamental forces and constituents of matter by recreating the conditions just after the beginning of the Universe. This research is unique and indispensable for a deep understanding of how our Universe began, how it evolved, and how it works today. We are eager to build and work at the facility.
2. The technical feasibility of the ILC has been demonstrated in the Technical Design Report, The ILC is ready to be built following the completion of an engineering-design phase. The project is now in a phase where governmental involvement should lead to a decision to realise the project. In this context we express our appreciation of the ongoing project assessment being undertaken by the Japanese government.
3. The ILC is one of the largest scientific projects ever proposed, on a similar scale to the Large Hadron Collider project. Its realisation as an international project requires the establishment of an international framework for sharing the cost and expertise among countries. We therefore intend to facilitate discussions between governments and funding authorities to achieve this goal as soon as possible.



# SiD/ILC Timeline

## Towards an ILC Project in Japan

- Beyond the direct scientific case for the ILC – many other factors in play, e.g.
- Acceptance of the ILC by the **wider scientific community** in Japan
- Potential role of a major ILC laboratory in Japan's **socio-economic decentralization** policy
- The **strategic importance** of the U.S. – Asian Pacific Rim alliance – recent trade pact
- How to make a **truly global project** fly – Harry's article in Newsline

# SiD/ILC Timeline

April - Meeting at Japanese Society for the Promotion of Science (JSPS)



- Proposal to form a U.S. – Japan Caucus between DIET members and members of U.S. Congress
- Associated meeting at the Hudson Institute
- Dinner at Japanese Ambassador's residence

# SiD/ILC Timeline

Oct 2015 – New U.S.-Japan Science and Technology agreement signed.



Goal is to establish a Working Group between MEXT and DoE to discuss financing the ILC.

2016 – 2018 Negotiations over funding ILC. Hopefully a period of rising investment in detectors for ILC.

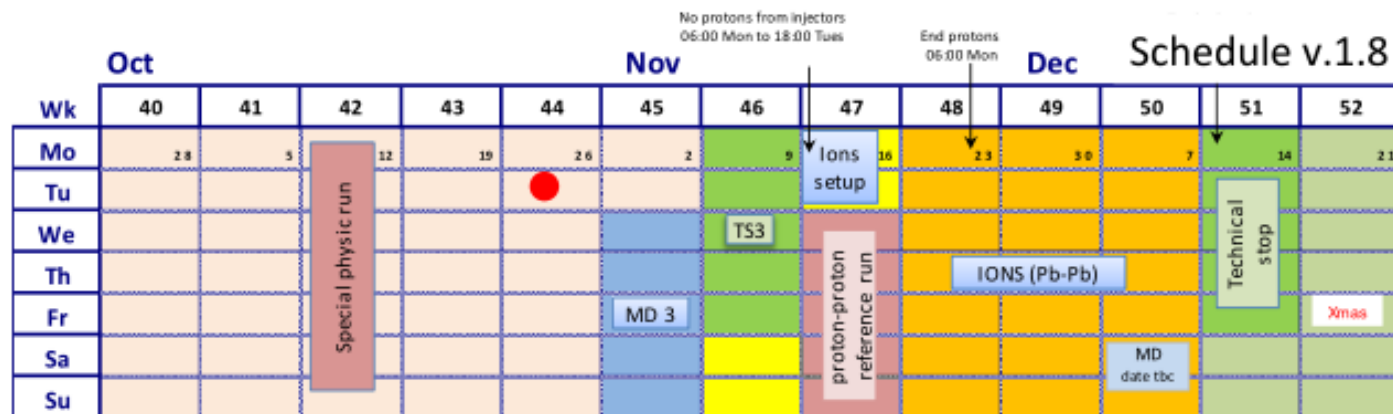
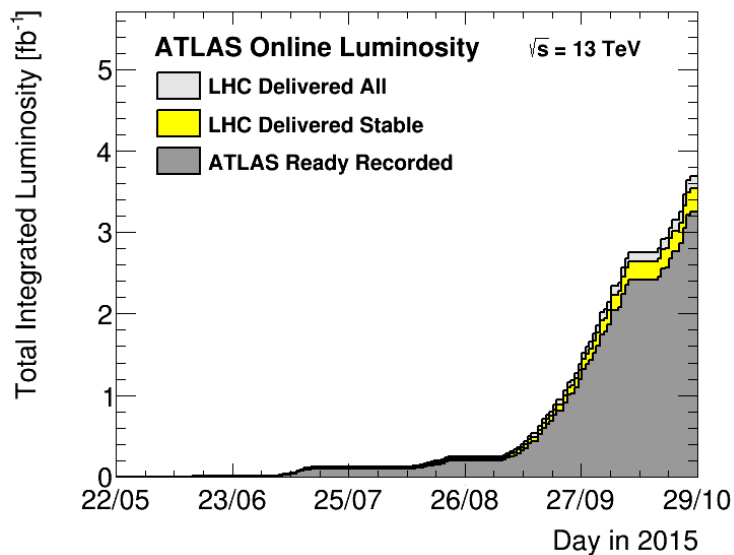
# SiD/ILC Timeline

Next major event – Japanese visit to DC in January 2016

Still expecting some “significant statement” from Japan in Spring 2016

Unclear what “waiting for LHC results from Run 2” means

Have  $\sim 3 \text{ fb}^{-1}$  ...



Is  $\sim 50 \text{ fb}^{-1}$  next year “enough” ??

# SiD/ILC Status

*Assuming some movement in 2016 towards a real ILC Project:*

2016 - 2020 Optimization of SiD (can only truly be done with serious resources after project approval) and production of a Technical Design Report.

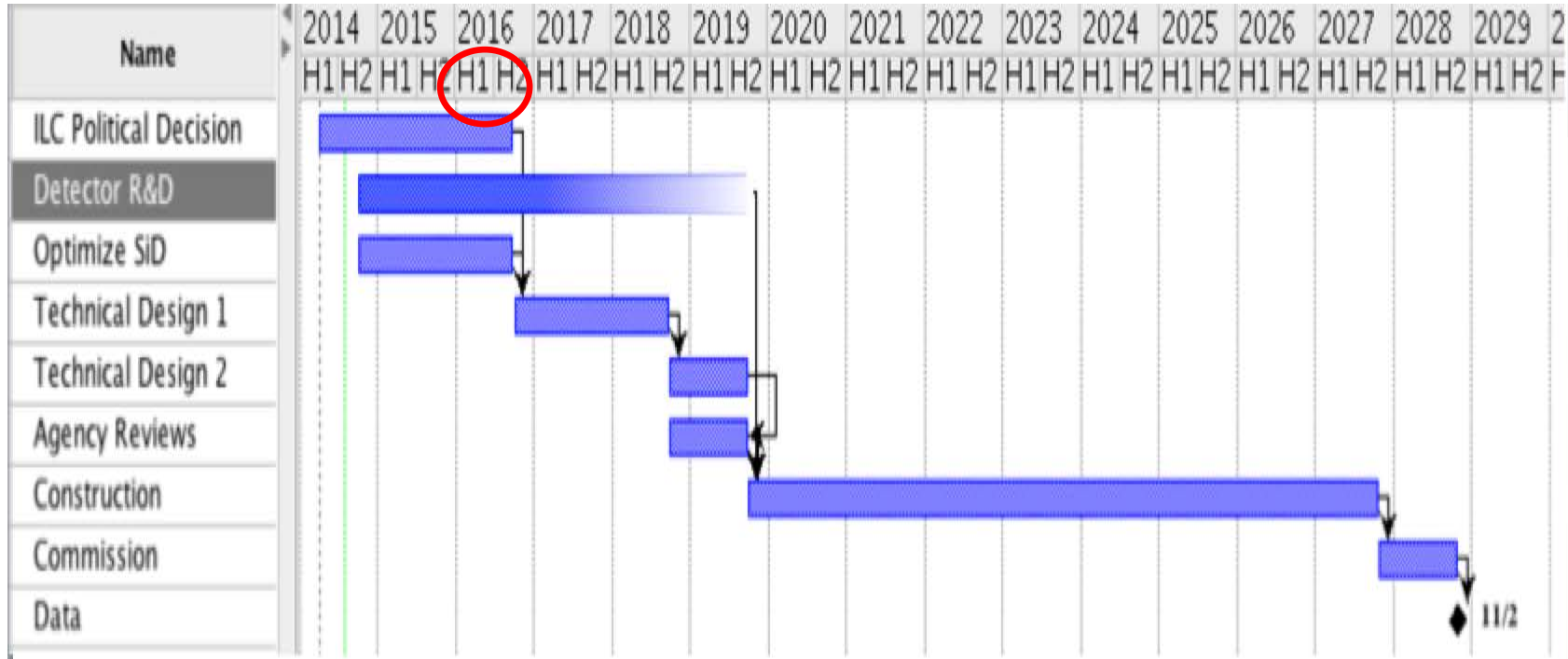
2020 – 2021 Review of TDR

2022 – 2028 Construction of SiD

2028 – 2030 Commissioning and start of data taking.



# ILC/SiD Timeline



Accelerator construction is a 9-year effort while the **detector constructions are projected to take at least 8 years.**

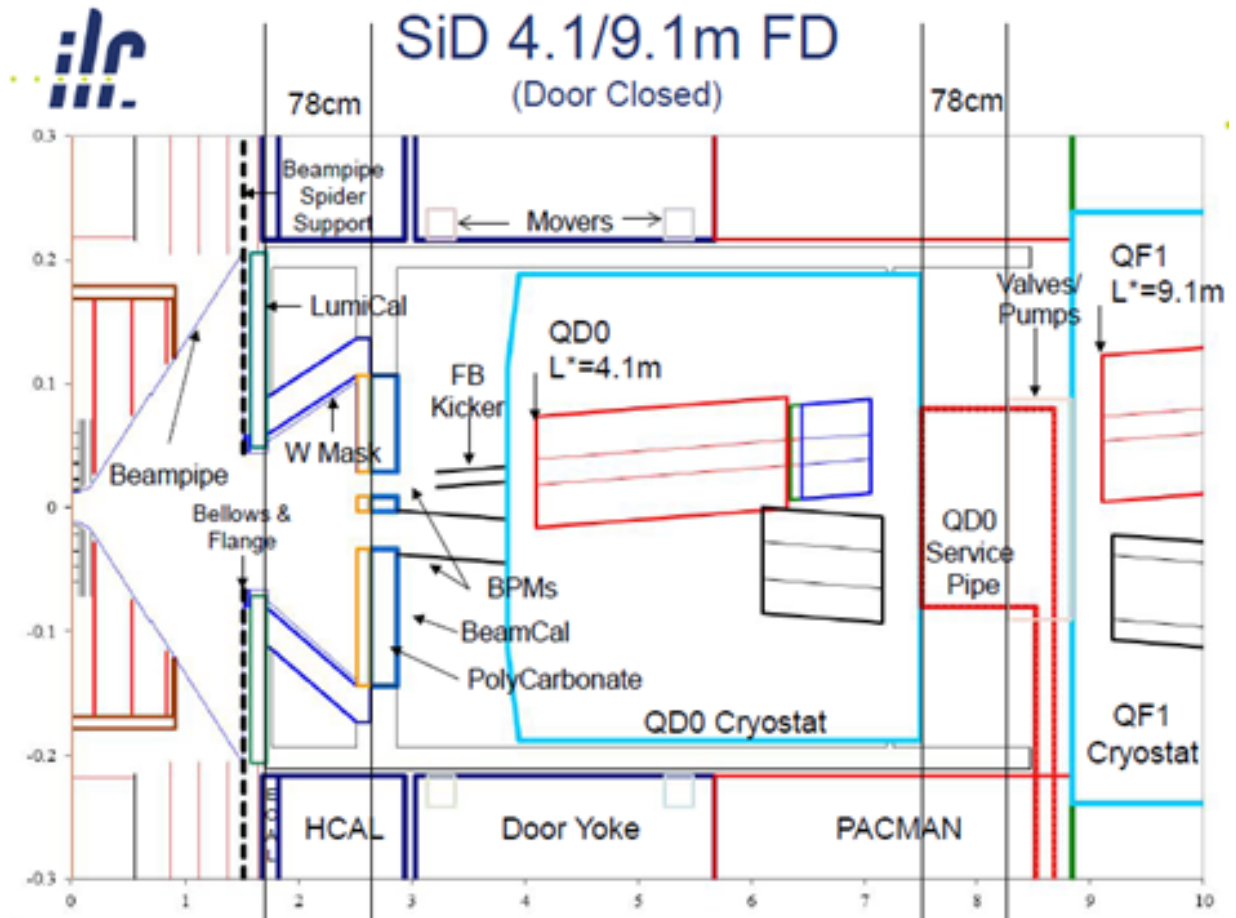
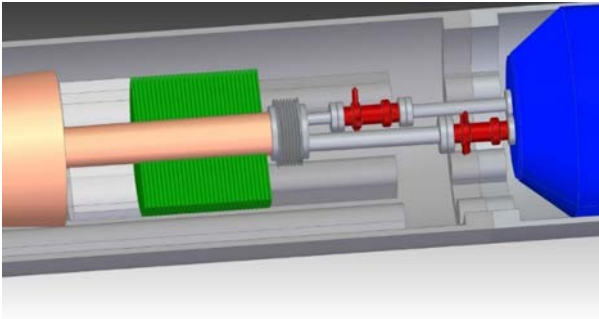
## SiD Activities

- Weekly Executive Committee meetings
- Weekly Optimization meetings – lead by Jan Strube
- Participation in ALCC meetings representing SiD Consortium
- Participation in bi-weekly LCCPDeb meetings
- Participation in MDI/CFS Working Group
- Ongoing discussions with DoE and other agencies concerning laboratory, detector R&D support

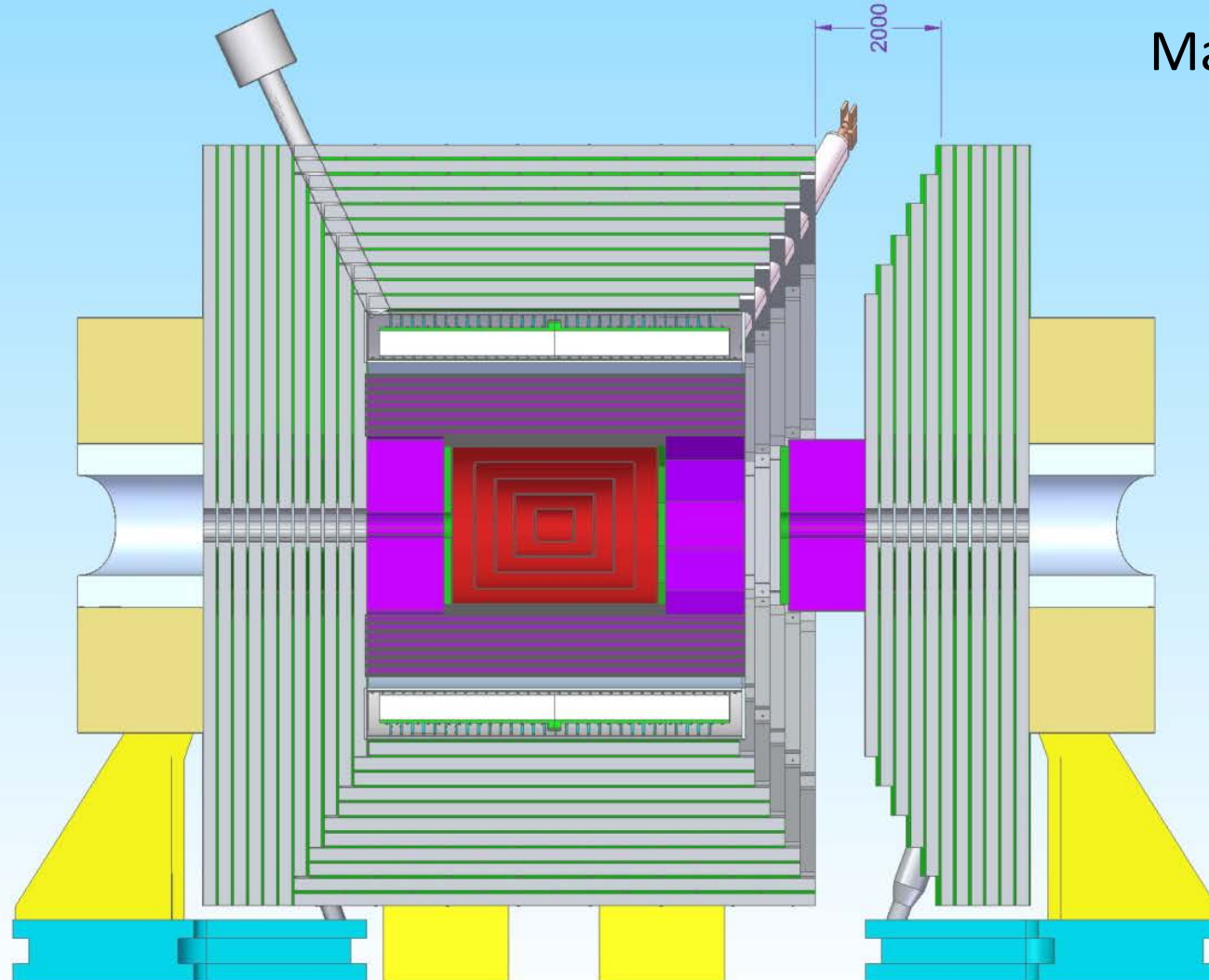
# Examples of ongoing work for SiD

## New forward region layout

- $L^*$  of 4.1m for both SiD and IL
- Occupancy studies (VTX, Ecal,...) with/without DiD coils
- Buffer depth for KPiX
- BeamCal studies for physics – electron identification in face of large backgrounds



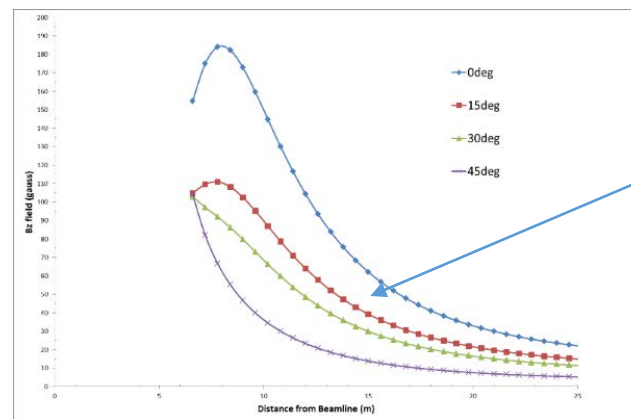
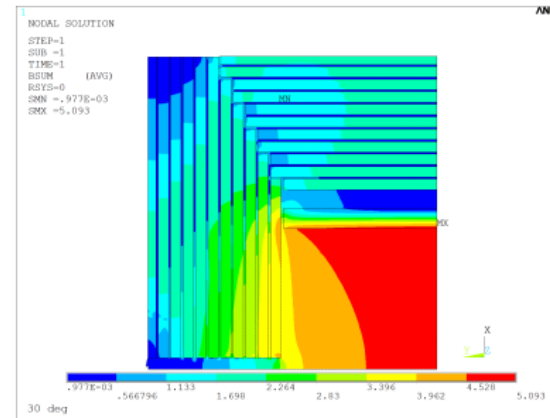
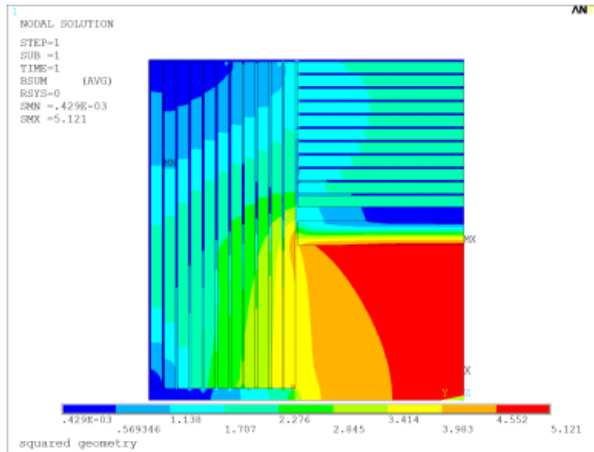
# New design of steel/flux return



Marco Oriunno -  
SLAC

# Recent/Ongoing SiD Detector Studies

## Magnet studies – fringe field reduction



< 50 Gauss at 15m

M. Oriunno (SLAC)

## At this SiD meeting

- Report from Hcal Selection Task Force – lead by Jim Brau
- Report from PDAP meeting
- Discussion of SiD situation going forward
- SiD at circular collider(s)??

# SiD at LCWS 2015

Today

08:30 - 10:15

## SiD Collaboration Meeting

Conveners: Prof. Andy White (University of Texas at Arlington), Dr. Marcel Stanitzki (DESY)

Location: Empress A

### 08:30 **Introduction and plans 20'**

Speaker: Prof. Andy White (University of Texas at Arlington)

### 08:50 **SiD Status & Changes to SiD since the DBD 30'**

Speakers: Marco Oriunno (SLAC National Accelerator Laboratory (US)), Dr. Thomas Markiewicz (SLAC)

### 09:20 **Report on SiD Optimization 20'**

Speaker: Dr. Jan Strube (PNNL)

### 09:40 **SiD Consortium Institutional Board Meeting (closed) 30'**

Speaker: Prof. Philip Burrows (Oxford University)

10:45 - 12:30

## SiD Collaboration Meeting

Conveners: Dr. Marcel Stanitzki (DESY), Prof. Andy White (University of Texas at Arlington)

Location: Empress A

### 10:45 **Preview of PDAP presentation 30'**

Speaker: Dr. Marcel Stanitzki (DESY)

### 11:15 **Plans for SiD in 2016 20'**

Speaker: Prof. Andy White (University of Texas at Arlington)

### 11:35 **SiD Software/Computing 20'**

Speaker: Norman Graf (SLAC)

### 11:55 **Vertexing & Tracking 21'**

Speaker: Dr. Joel Goldstein (Bristol University)

# SiD at LCWS 2015

## Thursday SiD Dinner – all welcome !! (7pm Grill Room)

13:30 - 15:30

### SiD Collaboration Meeting

Conveners: Prof. Andy White (University of Texas at Arlington), Dr. Marcel Stanitzki (DESY)

Location: Mcdonald A

13:30 **Report from HCAL Selection Task Force 30'**

Speaker: Jim Brau (U. Oregon)

14:00 **Report from PDAP 15'**

Speakers: Prof. Andy White (University of Texas at Arlington), Dr. Marcel Stanitzki (DESY)

14:15 **MDI and Forward calorimetry changes 25'**

Speaker: Bruce Andrew Schumm (University of California, Santa Cruz (US))

14:40 **ECAL Status 20'**

15:00 **Muon System News 20'**

Speaker: Dr. Paul Rubinov (Fermilab)

16:00 - 18:00

### SiD Collaboration Meeting

Conveners: Prof. Andy White (University of Texas at Arlington), Dr. Marcel Stanitzki (DESY)

Location: Macdonald A

16:00 **Optimization reports 50'**

Speaker: Dr. Jan Strube (PNNL)

16:50 **Discussion Time 1h0'**

Speakers: Prof. Andy White (University of Texas at Arlington), Dr. Marcel Stanitzki (DESY)

## Friday