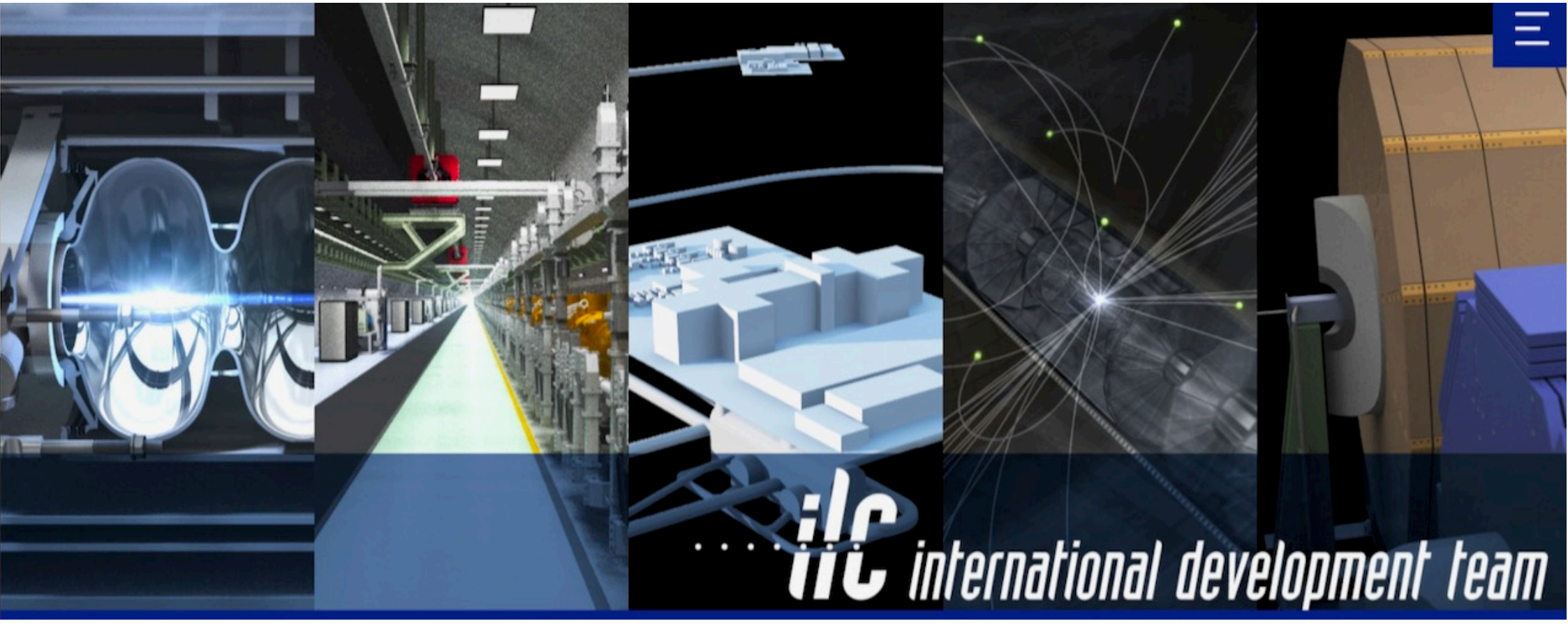


WG3 Physics, Computing & Software
ILC-Europe, 3 June 2021

Jenny List, Michael Peskin, Aidan Robson, Junping Tian
Frank Gaede, Daniel Jeans, Jan Strube

WG3 Physics Potential & Opportunities

international development team

https://linearcollider.org/team/wg3/physics/

Topical Groups

Higgs properties

Conveners: Shinya Kanemura (Osaka), Patrick Meade (Stony Brook), Chris Potter (Oregon), Georg Weiglein (DESY) [**Send email**]

Top/heavy flavour/QCD

Conveners: Adrian Irles (Valencia), Alexander Mitov (Cambridge), Hua-Xing Zhu (Zhejiang) [**Send email**]

BSM particle production

Conveners: Mikael Berggren (DESY), Shigeki Matsumoto (IPMU), Werner Porod (Wurzburg), Simone Pagan Griso (LBNL) [**Send email**]

Electroweak physics

Conveners: Wolfgang Kilian (Siegen), Taikan Suehara (Kyushu), Graham Wilson (Kansas) [**Send email**]

Global interpretations

Conveners: Tim Cohen (Oregon), Christophe Grojean (DESY), Sven Heinemeyer (Madrid), Sunghoon Jung (Seoul) [**Send email**]

Modelling and precision theory

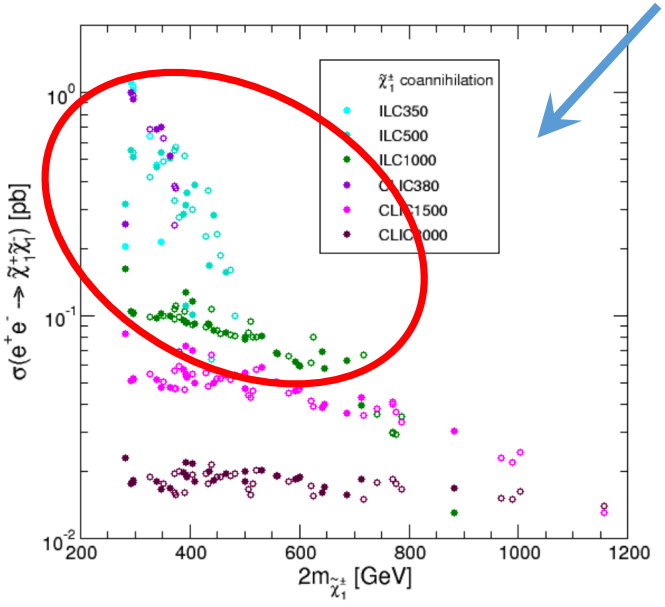
Conveners: Gudrun Heinrich (KIT), Stefan Hoeche (FNAL), Zhao Li (IHEP), Juergen Reuter (DESY) [**Send email**]

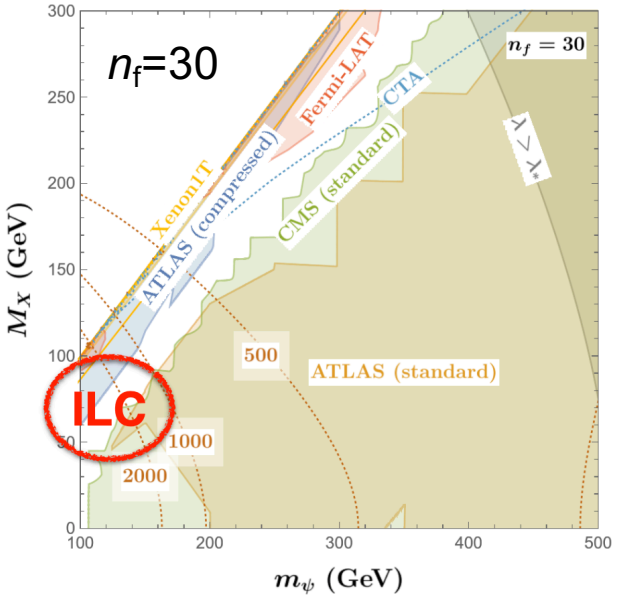
Launch of Physics subgroup and Topical Groups

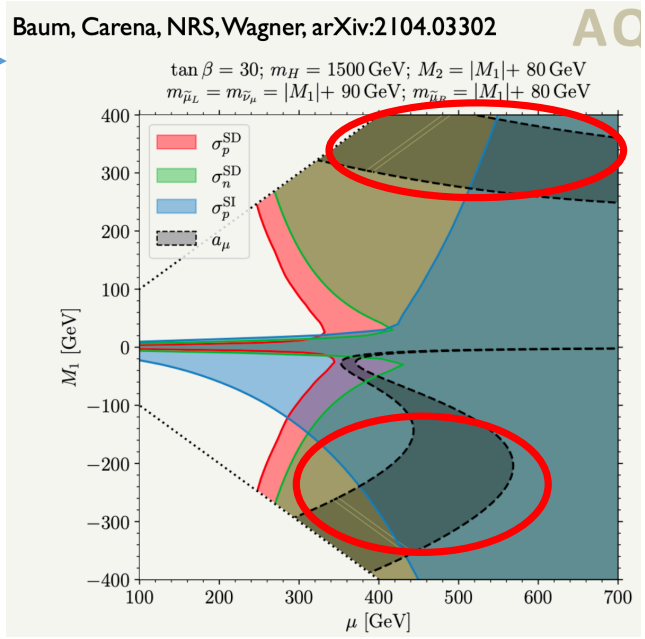
- First public & scientific meeting took place last **Thursday, 27th May**
  https://agenda.linearcollider.org/event/9218/

  – Short presentation from each Topical Group on their program / plans
  – 1-hour mini-symposium on Muon *g*–2 and relation to e+e-

Small-μ supersymmetry – Nausheen Shah
Lepton portal dark matter – Yang Bai
Vector leptoquarks – Seong Chan Park
Supersymmetry – Sven Heinemeyer







Future open scientific meetings

- Initially: regular monthly open scientific meetings,

each organised by 2–3 Topical Groups – frequency will increase gradually as more people join. Schedule:

  - **Thursday 17th June**, 3pm CEST
  - **Thursday 15th July**, 3pm CEST
  - **Thursday 12th August**, 3pm CEST
  - **Thursday 16th September**, 3pm CEST

Global Interpretations and BSM talks
including: Status update on EFT fits
Connecting UV models to EFTs

- All listed on indico (linked from main WG3 Physics webpage)
  https://agenda.linearcollider.org/category/266/

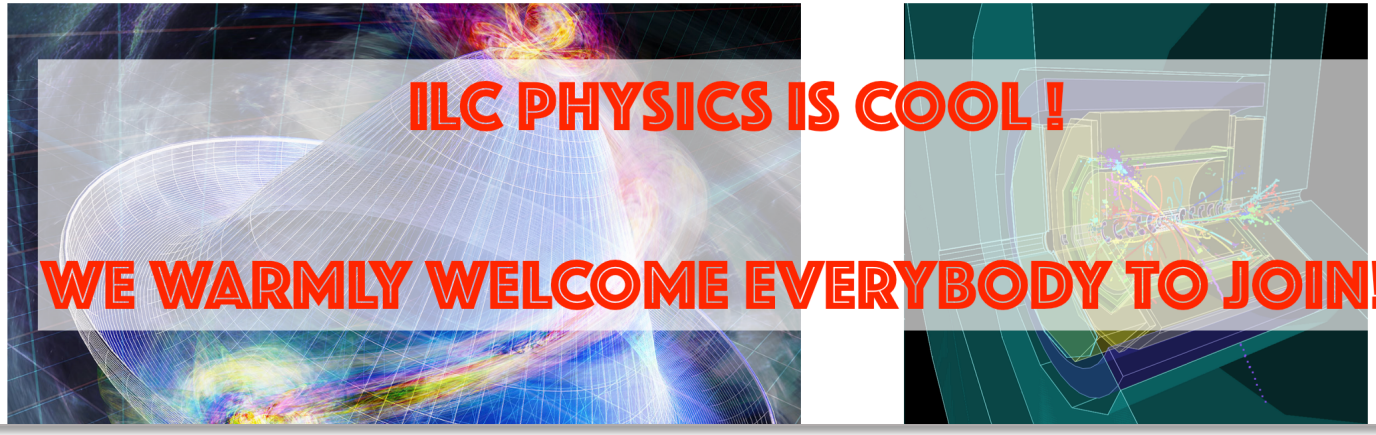
- Sign-up for mailing lists, overall WG3 and topical lists:
  https://agenda.linearcollider.org/event/9154/

WG3 Modelling and Precision Theory TG meeting

- Modelling and Precision Theory Topical Group initial dedicated meeting:
  - **Thursday 10th June**, 5pm CEST

Goals, next steps Invitation to Join & Collaborate

- Transferral of SLC/LEP legacy, smoothly enhancing existing ILC simulations (+ CLIC / CEPC)
- Identify need for improvement from theory + simulation
- Motivate people to work on ILC theory, precision & simulation
- Contacted large group of theorists and experimentalists this week, **hope for more (crowd sourcing)**
- **First Working Group Meeting: Thu, June 10, 2021 1700 hrs CERN time, 2400 hrs KEK time**



Ritsch, ÖAW [Austrian Academy of Sciences]

ILD Event Display

- Details will be circulated by email

ECFA Higgs Study

- Kickoff meeting: **Friday 18th June**, 2pm CEST
  https://indico.cern.ch/event/1033941/

14:15 → 15:30 **Working Group 1: Physics Potential**

- 14:15 **Experimental challenges at future e+e- colliders**
  Speaker: Emmanuel Francois Perez (CERN)
- 14:40 **Challenges in global interpretation of data from future e+e- colliders and interplay with HL-LHC**
  Speaker: Jorge de Blas Mateo (University of Notre Dame)
- 15:05 **Theoretical challenges for future e+e- colliders**
  Speaker: Michael Peskin

15:30 → 15:45 **Coffee / tea break**

15:45 → 17:05 **Working Group 2: Physics Analysis Methods**

- 15:45 **Physics Event Generators, BeamConditions (Beamstrahlung, Polarization), Standard Candles and Luminosity**
  Speaker: Wolfgang Kilian (University of Siegen)
- 16:05 **Physics Performance (reco Pflow, Kinematic fit, tracking, PID)**
  Speaker: Philipp Roloff (DESY)
- 16:25 **Detector Simulation (FastSim and Full Sim etc.)**
  Speaker: Daniel Jeans (University of Tokyo)
- 16:45 **Software Ecosystem**
  Speaker: Gerardo Ganis (CERN)

17:05 → 17:25 **Way-ahead with the WG1 and WG2 activities**

E-group for future updates will follow

WG3 Software & Computing

https://linearcollider.org/team/wg3/software-and-computing/
https://github.com/Linearcollider/IDT-WG3-SoftComp/

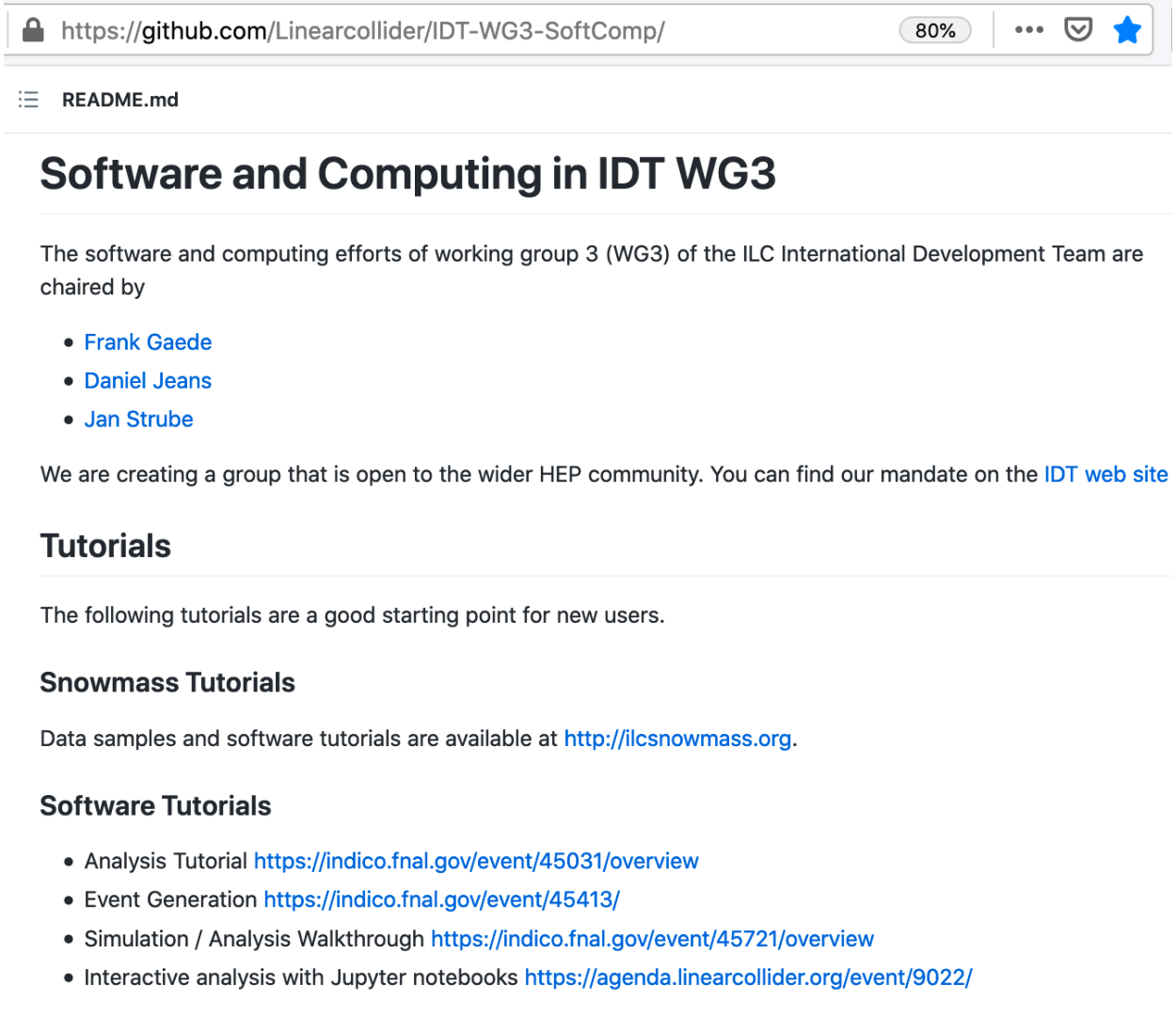
Software and Computing Subgroup (WG3)

Mandate

1. To contribute to enlarging the ILC community by bringing in new people and groups and facilitating the start-up of their activities.
2. To estimate and plan the computing resources needed for the ILC (space, power, networks, hardware, manpower on site/campus, ...) and to establish software and computing as central topics for the pre-lab in support of the EOI/LOI process.
3. To ensure connection to and ILC representation in relevant activities beyond ILC, e.g. key4hep, IRIS-HEP, or in the context of the ECFA Higgs Factory study or Snowmass. The use of common software will facilitate the merger of the different groups after the selection of experiments.
4. To coordinate and request Grid resources (storage and CPU) at different Grid sites for ILC accelerator, detector and physics studies under the ILC VO.

WG3 Software & Computing

https://linearcollider.org/team/wg3/software-and-computing/
https://github.com/Linearcollider/IDT-WG3-SoftComp/



https://github.com/Linearcollider/IDT-WG3-SoftComp/ 80%

README.md

Software and Computing in IDT WG3

The software and computing efforts of working group 3 (WG3) of the ILC International Development Team are chaired by

- Frank Gaede
- Daniel Jeans
- Jan Strube

We are creating a group that is open to the wider HEP community. You can find our mandate on the IDT web site

Tutorials

The following tutorials are a good starting point for new users.

Snowmass Tutorials

Data samples and software tutorials are available at http://ilcsnowmass.org.

Software Tutorials

- Analysis Tutorial https://indico.fnal.gov/event/45031/overview
- Event Generation https://indico.fnal.gov/event/45413/
- Simulation / Analysis Walkthrough https://indico.fnal.gov/event/45721/overview
- Interactive analysis with Jupyter notebooks https://agenda.linearcollider.org/event/9022/

- Discussions ongoing on lab computing involvement / contributions

- Existing data samples and tutorials gathered for newcomers

- Planning monthly software tutorial series – topics by demand (e.g. particular aspects of high-level reconstruction, prepared by experts)

– first tutorial: **23rd June 15:30** CEST
F. Zarnecki and J. List:
ILC Delphes card and first analysis plots with miniDSTs
– announcement to follow very soon