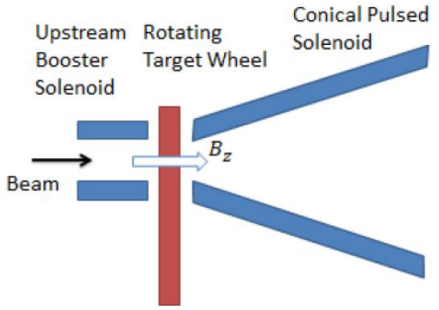
Sources Subgroup Summary, Dec.13. 2021

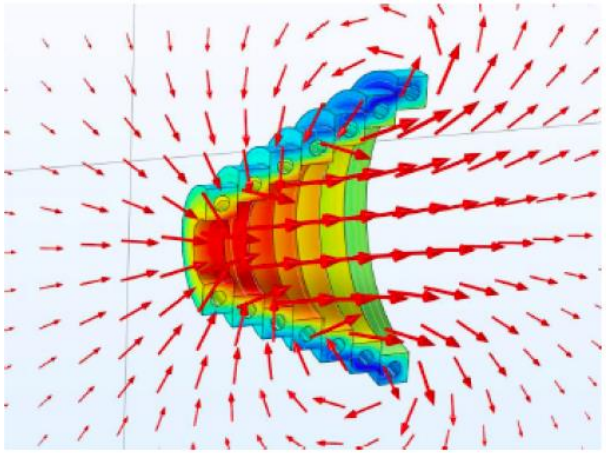
K. Yokoya, for IDT-WG2 Jan.11.2022

- Dec.13 23rd Regular meeting
  - ✓ Masao Kuriki, Hitoshi Hayano, Gudi Moortgat-Pick, Joe Grames, Kaoru Yokoya, Sabine Riemann, Tsunehiko Omori, Tohru Takahashi (Some may be missing)
  - ✓ Indico https://agenda.linearcollider.org/event/9507/
- Undulator positron source status
  - ✓ Gudi status-undulator-1221rev.pdf
- e-Driven positron source status
  - ✓ Masao IDTWG2_EDriven_Summarypub.pptx
- Next meeting
  - ✓ Jan.17 (Mon)
  - ✓ “Recent development of the target for e-driven source” (Omori)

Undulator positron source status

- Undulator
  - ✓ Progress in simulation
    - Heating of masks including field errors
- Target
  - ✓ Ti6Al4V, wheel of 1m diameter spinning in vacuum
  - ✓ Material test using Mainz microtron with high PEDD
  - ✓ Another heating test at Hamburg
  - ✓ Magnetic bearings: well-known but negotiation with suppliers needed for ILC-specification





- Focusing device
  - ✓ Best candidate: pulsed solenoid
  - ✓ Design calculation on-going
  - ✓ Peak field ~5T
  - ✓ Max field on target: ~3T
  - ✓ Ferrite shielding behind coils
    - reduce the field and heat on target
    - yield decreased only slightly
  - ✓ Yield simulation results : ~1.74 at DR
  - ✓ Another choice: plasma lens

e-Driven positron source status

- Electron driver
  - ✓ S-band (2.6GHz) 3m TW structure, 102 cavities, ~32MV/cavity, 3GeV + 10% margin
  - ✓ Loading compensation by AM (amplitude modulation)
- Target
  - ✓ W/W-Re , 50cm diameter disk, rotating
  - ✓ Water cooling, Double ferro-fluid vacuum seal
  - ✓ Prototype being tested
    - ferro-fluid test
    - rotation in vacuum
    - Fluid evaporation test (analysis of evaporated gas components)
- Flux concentrator
  - ✓ Heat calculation
  - ✓ Cooling method
- Capture cavity
  - ✓ APS cavity
  - ✓ Field calculation
  - ✓ Simulation of loading compensation