Slow Beam Loss

What we know from operating ERLs and what should be taken into account in new ERL designs?

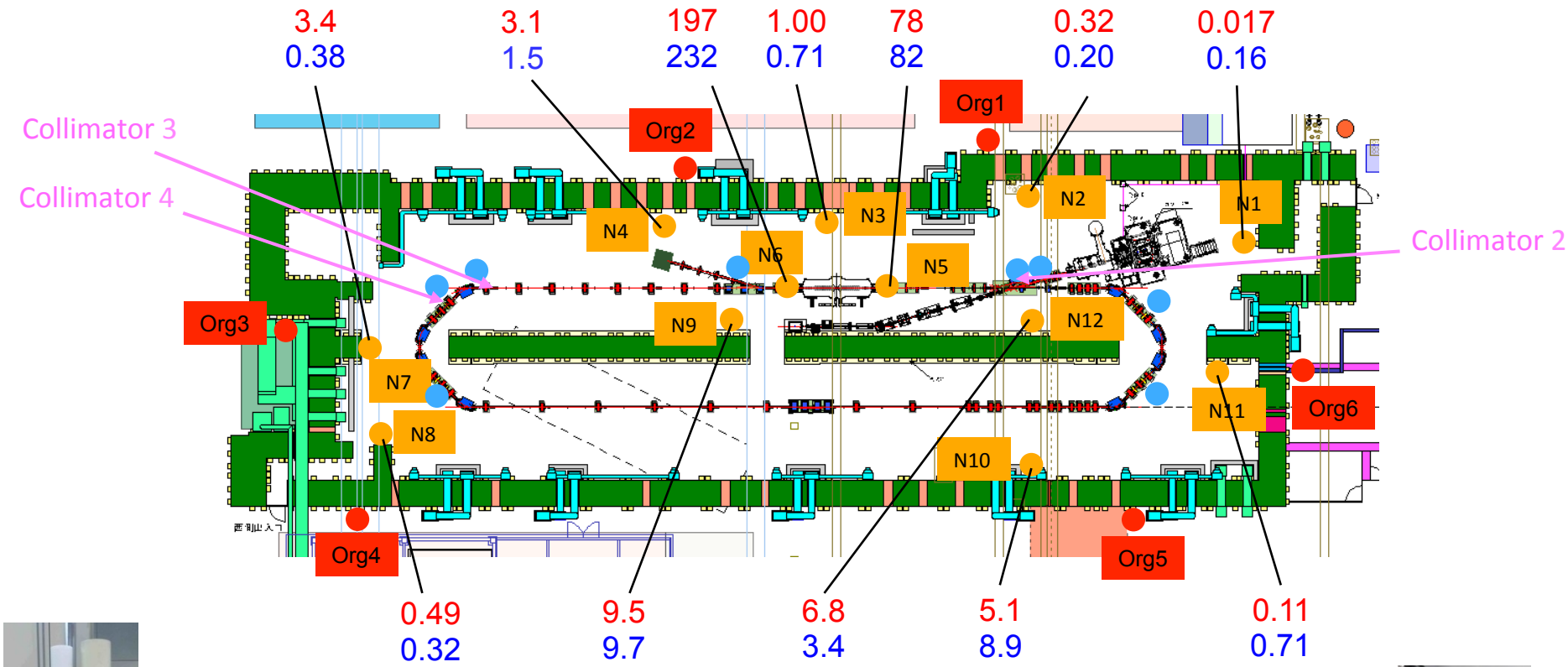
- Beam halo sources:
  - cathodes, field emission/dark currents, beam transport with magnet errors, scatterings, SR, beam-beam,…
  - Are the halo sources well understood in the operating ERLs?
  - Can these effects be well simulated on the design stage?
  - What are required design provisions against beam halo and related losses? Can collimation be effective?
- Beam loss prevention (to 10^{-6} level)
  - Orbit/Optics correction efficiency
  - Monitoring slow beam loss
  - ?

Radiation and Beam Losses (at beam current of ~80 μA)

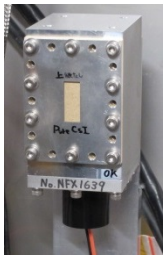
Unit: mSv/h

Radiation levels inside the accelerator room under two conditions:
Red: using collimators No. 2, 3, 4 (shown in the previous page), on April 2, 2015
Blue: using collimator No. 2 (right 2.0 mm, top 3.4 mm), on April 3, 2015

Beam optics: LCS



Radiation monitors (Organge1-6), for interlock (PPS)

Loss (radiation) monitors, ALOKA MAR-782, for interlock (MPS)

Fast loss monitors, for fast interlock (MPS)