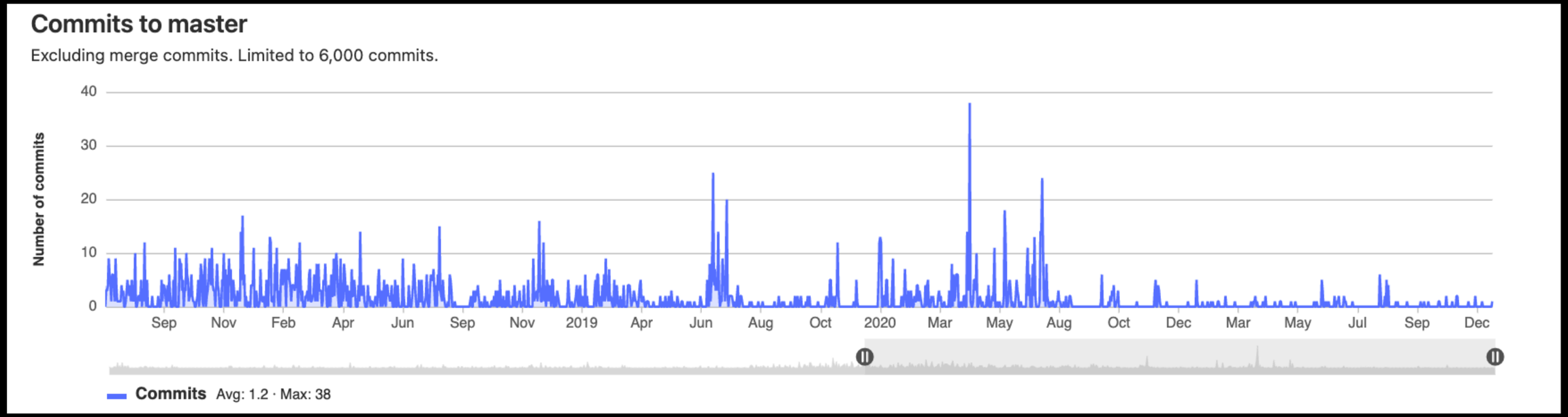
Virtual OPAL Developer Meeting 2022 - Introduction



Andreas Adelmann (Paul Scherrer Institut)

Content

1. Updates OPAL (A Adelmann)
2. Updates on IPPL V 2.x (S Muralikrishnan)
3. New challenges in FEL modelling and consequences for OPAL (A Adelmann)
4. pyOPAL (Ch Rogers)
5. 2022 releases (A Gsell)
6. Pressing open issues (all)

Updates

- ~~88~~ 94 member in the active mailing list (opal@lists.psi.ch)
- +1 very active developer

Dr. Muralikrishnan Sriramkrishnan

Latest OPAL release is: 2021.1.0

- New Undulator element with its own FDTD electromagnetic solver,
- LOWENERGYTHR attribute for energy loss calculation by PARTICLEMATTERINTERACTION command
- Energy loss calculation and beam scattering are available for all light ions
- Stopping power at low energy region
- ALPHA particles are supported in BEAM command
- ENABLEVTK option (default true) to control writing of voxel mesh output
- OUTFN attribute has been added to Cyclotron and Source elements
- Gas stripping is now available for DEUTERON beams and H2P beams in AIR

At present the focus in large is on:

- continue consolidation & code cleanup
- working on bugfixes / feature requests
  - 15 ~~15~~ bugs 19 ~~21~~ feature requests

* delayed OPAL paper

Current projects - 1

- P3M in OPAL (IPPL 1.0) (Sri & AA)
- IPPL 2.x (Sri & Matthias)

  ✓FFT based poison solver

  ✓ORB
- Ch Rogers
  - FFA modeling (Ring element)
  - pyOPAL
- Sri & AA + MSc student
  - SwissFEL modeling

Current projects - 2

- Prepare OPAL for IPPL 2.x (AA)

  ✓ adapt cmake such that IPPL is an external library

  ✓ header file adaption

  - Tensor and/in Quaternion class