Investigation of ion heating/transport process during CS-free merging plasma startup of spherical tokamak

Heating time scale
- **Phase1**: during merging
- **Phase2**: after merging

**Phase1**: ~ acceleration phase ~
- Heating around diffusion region
- Tilted profile formation with higher mass ratio (Hall effect)

**Phase2**: ~ confinement phase ~
- Contribution of better toroidal plasma confinement
- Downstream heating propagates vertically on closed flux surface

**Heating time scale**
- **Phase1**: during merging
- **Phase2**: after merging

*Images and diagrams showing the heating process and profiles.*