

# New geometry viewer in ROOT

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# Why?

- Lot of functionality in JSROOT
  - but limited performance
- Eve-7 with support of server-sides shapes
  - main server-side code for 3D rendering is there
- Hierarchy browser from RBrowser
- Reuse many components to provide TGeoManager browsing



# Easy to use

```
// load geometry

using namespace ROOT::Experimental;

auto viewer = std::make_shared<REveGeomViewer>(gGeoManager);

// select volume to draw
viewer->SelectVolume("CMSE");

// specify JSROOT draw options - here clipping on X,Y,Z axes
viewer->SetDrawOptions("clipxyz");

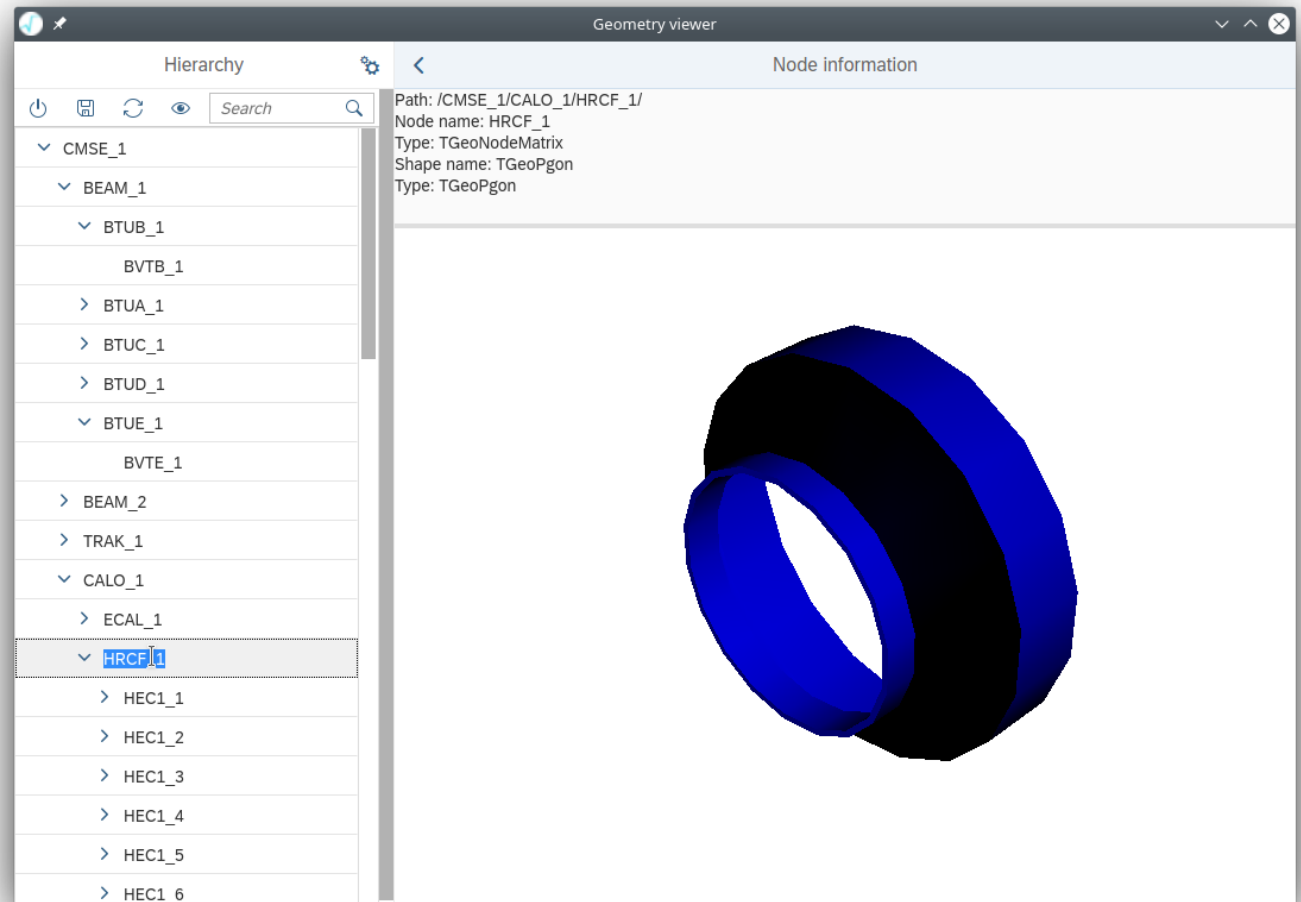
// set default limits for number of visible nodes and faces
// when viewer created, initial values exported from TGeoManager
viewer->SetLimits();

// start web browser
viewer->Show();

// add to global heap to avoid immediate destroy of RGeomViewer
RDirectory::Heap().Add("geom_viewer", viewer);
```

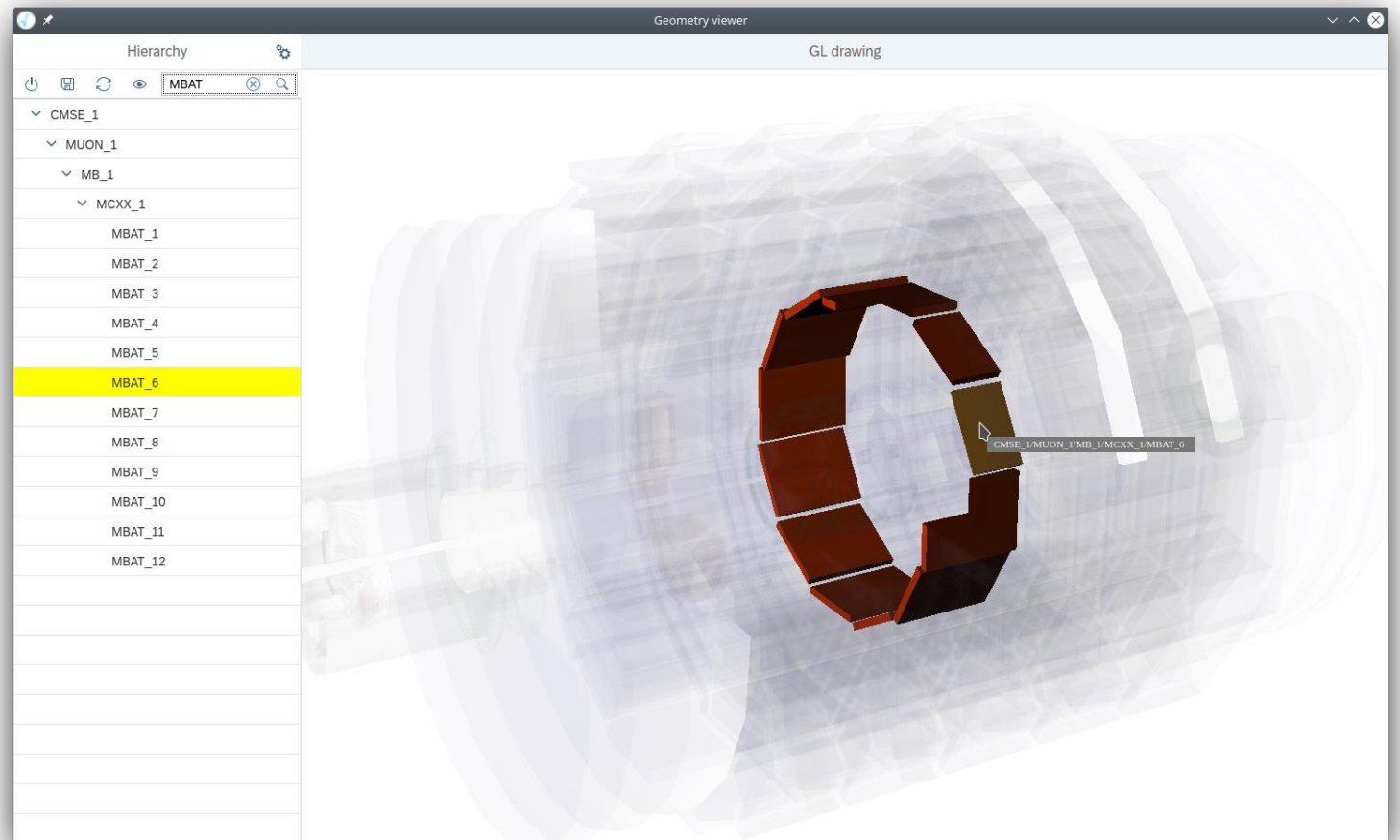
# Browsing nodes hierarchy

- Use hierarchy display from RBrowser
  - scalable
  - load only visible items
- Individual items draw
  - minimal type info



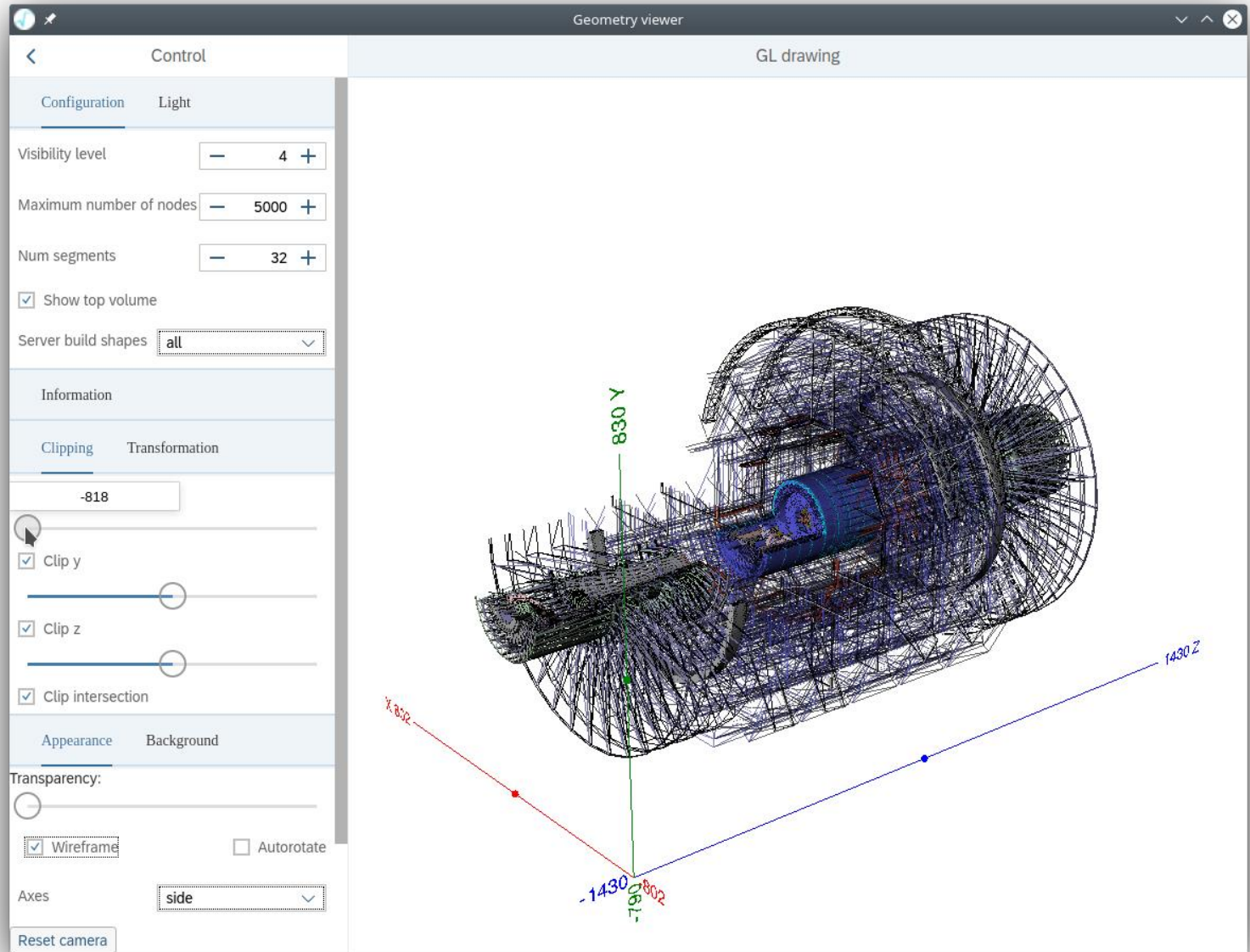
# Search nodes by name

- Show found
  - as hierarchy
  - highlight in drawing

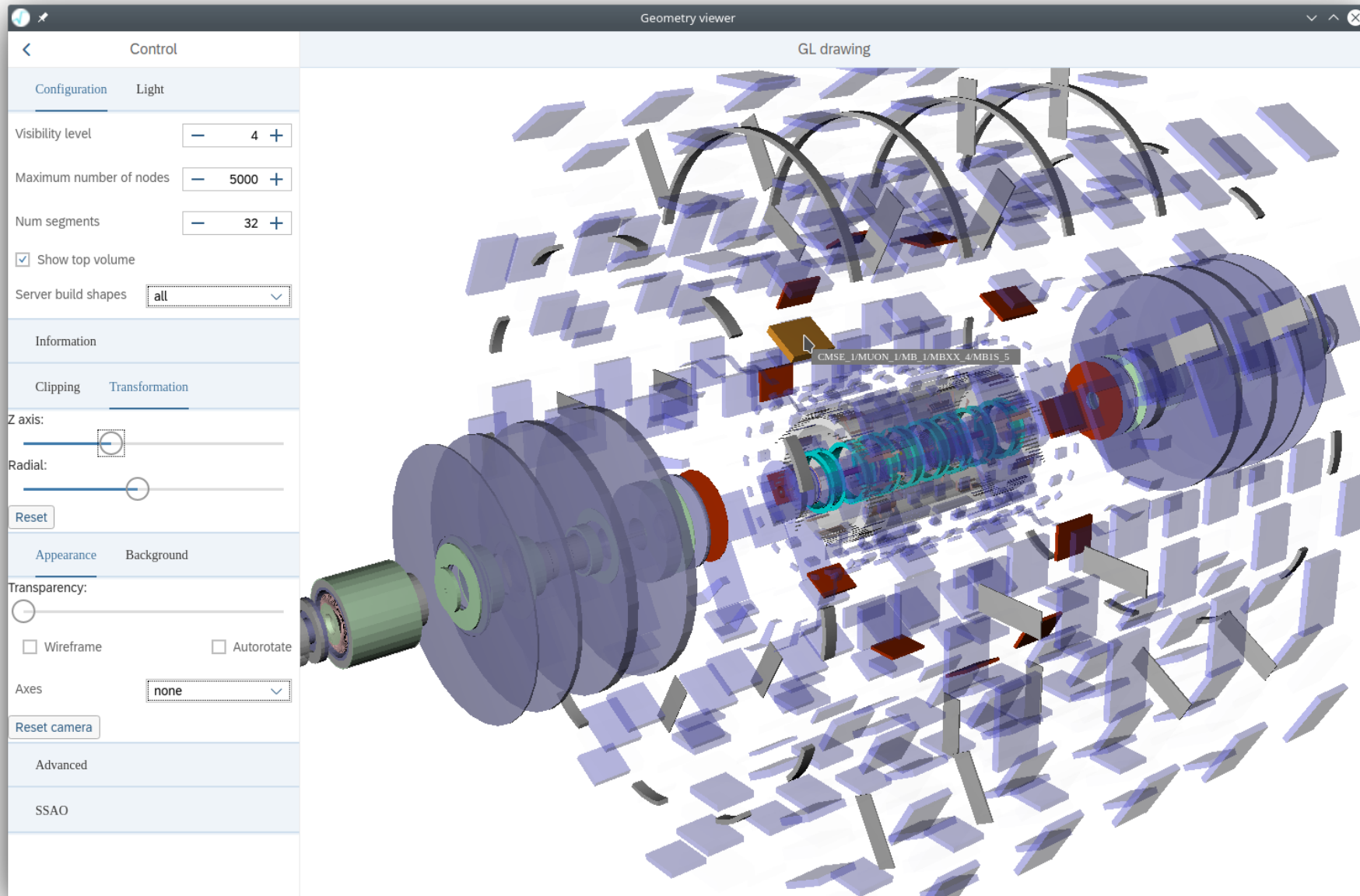


# Configuration

- Visibility level
- Scene lights
- Clipping
- Transparency
- Wireframe
- Axes
- Background
- ...



# Detector „explode“





# Offline usage

- Only client-side code is preserved
  - ROOT server just prepares data and stores on disk
- Exactly same look and feel
  - not for free, missing server code should be provided by client
- Can be used for outreach
- Example: <https://linev.github.io/geomCMS/>

# Status and plans

- Viewer can be used with any existing geometry
  - ROOT should be compiled with `-Droot7=ON`
  - `tutorials/eve7/viewer.C`
  - `tutorials/geom/webdemo.C`
- Many features also in JSROOT
- Plans:
  - integrate into RBrowser
  - bugfixes, features, ...
- Any feedback is welcome!