



Application of Unity for detector modeling in BESIII

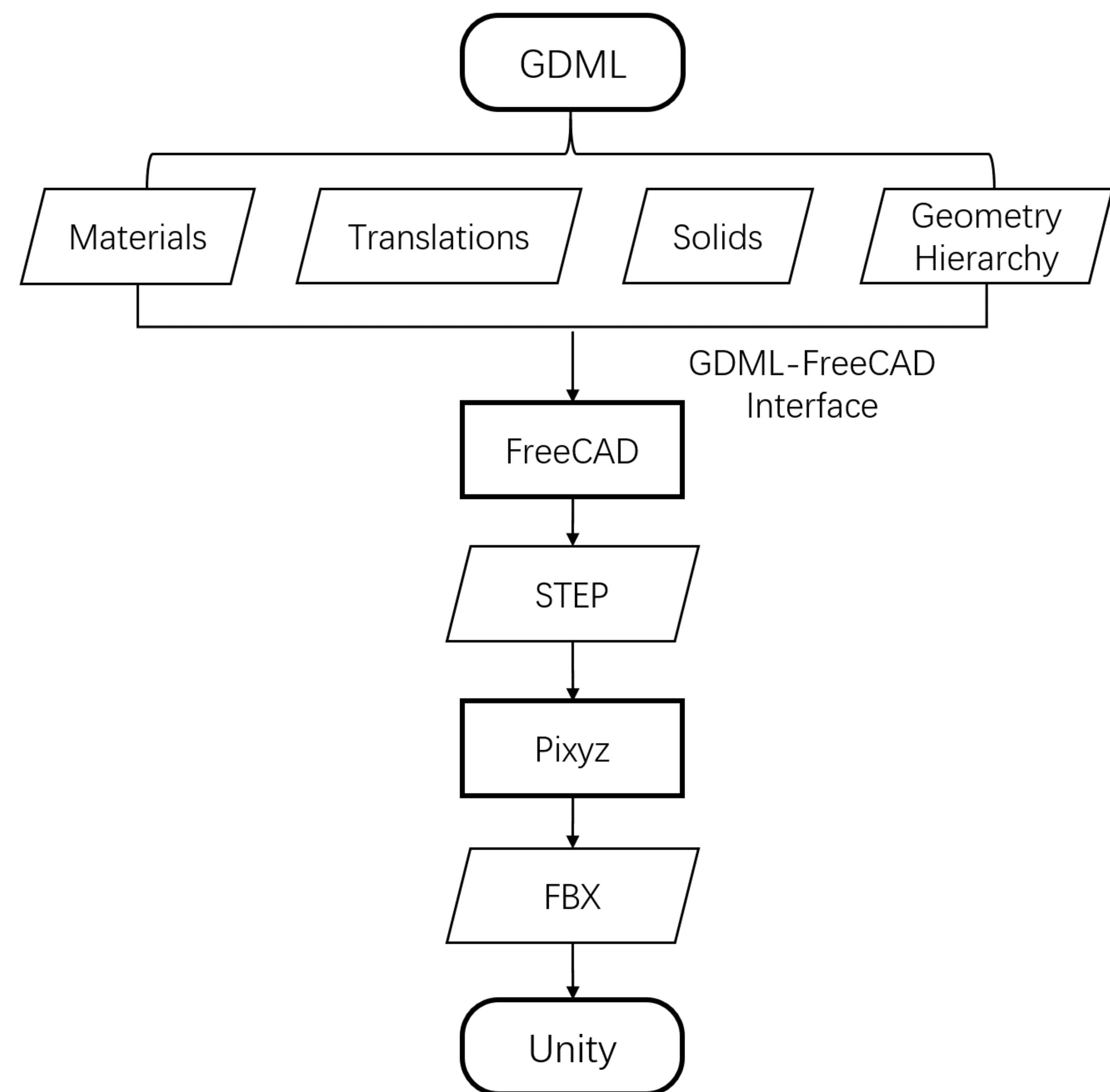


Kaixuan Huang, Zhijun Li, Shengsen Sun,
Yumei Zhang, Zhengyun You

Sun Yat-sen University / lizhj37@mail2.sysu.edu.cn

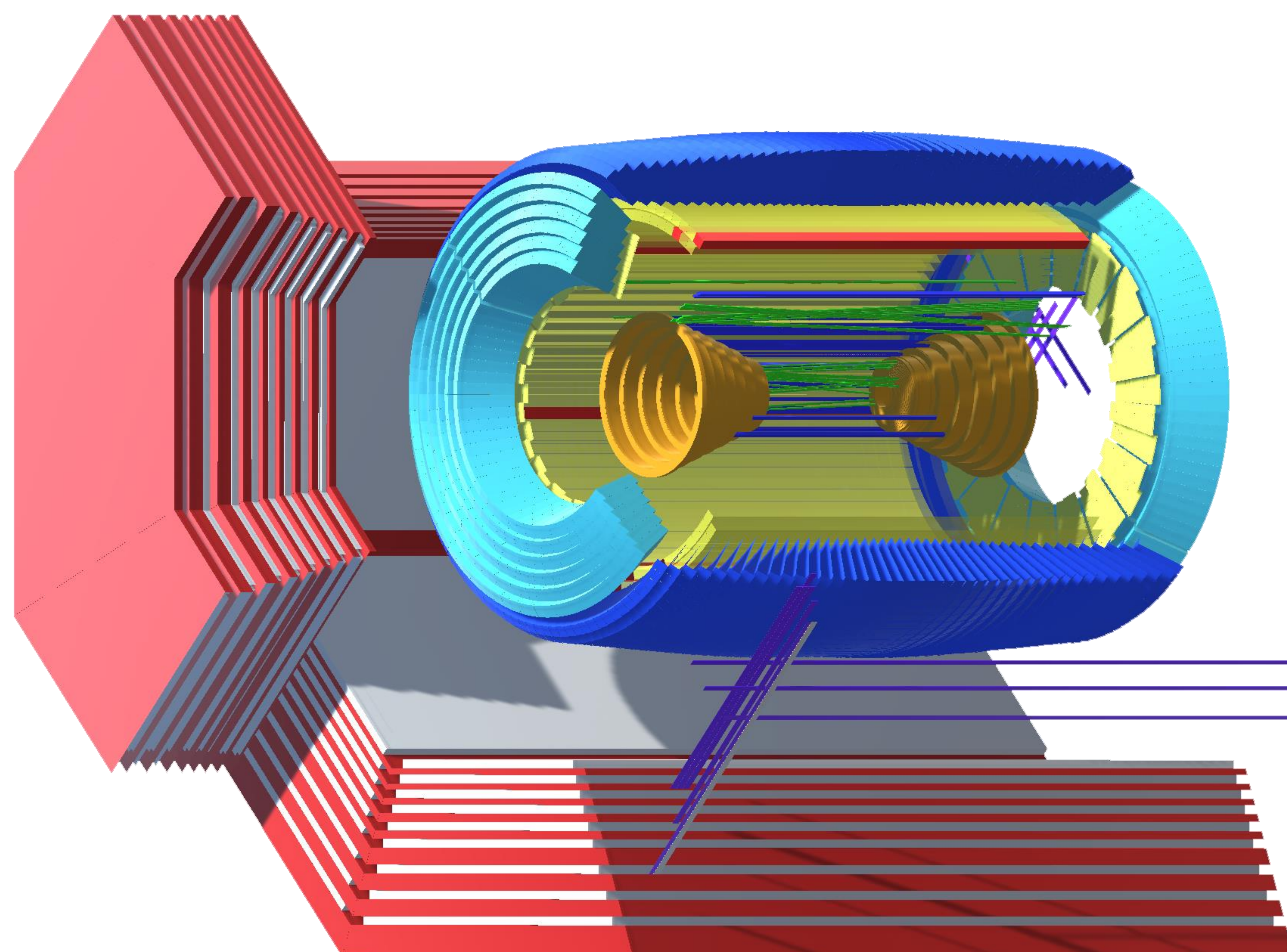
Detector Data Flow

- **GDML**, a professional detector geometry description language
- **FreeCAD**, supports the import of geometry in CSG format
- **PiXYZ**, optimized meshes, supports multiple file formats
- **Unity**, multiple platform support, provide impressive visual effects



BESIII in Unity

- BESIII sub-detectors: MDC, TOF, EMC, MUC
- Impressive display effects: adjust the **color**, **transparency**, **reflectivity**, and **texture** of the material for the detector units
- Automatic geometry transformation: the **material** list, **position** and **rotation** list, **shape** list, **hierarchy** of the whole detector tree
- The association between unique Identifier and detector unit: stored in the name of each node in Unity



Further Developments

- Event display tools
- Detector status monitoring software
- VR/AR applications for outreach
- Industrial applications