



AMS-02 Upgrade

Validation of the simplified Model



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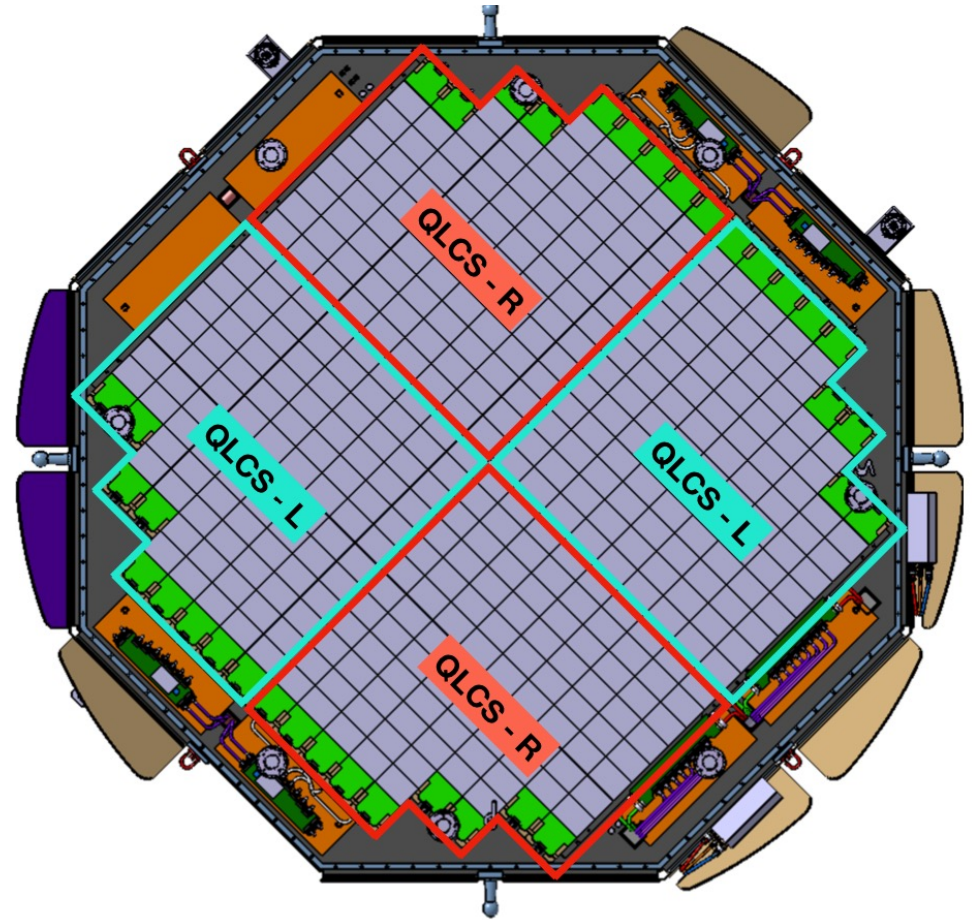
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Main question

How can the L0 layer be suitably simplified at the component level
(1/4 model of a detector layer)?

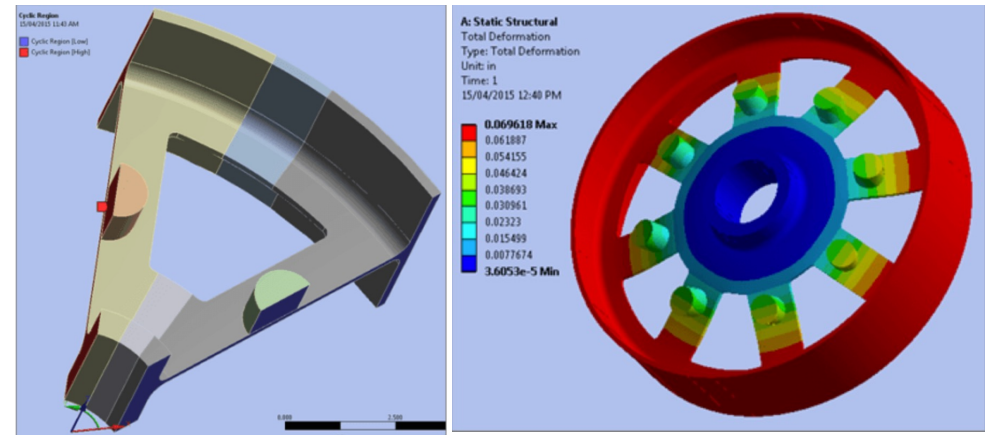
Simplify CAD Model

- Excluding all light weighted and detailed components
- Exclude all components that are suitable by the manufacturer (replacing them with point masses in the FEM model).
- Merging of components from the same material into a single component
- If necessary, simplify hexagonal shapes into circular shapes to reduce computation time in a first iteration.



FEM Analysis of the simplified Full Model

- Model all heavy and smaller components in the system model as point masses
- Develop suitable mesh
- Define appropriate boundary conditions
- Define multibody parts to develop a cyclic symmetry
- Run a Model Analysis



FEM Analysis of the simplified $\frac{1}{4}$ Model

- Simplify the CAD of the $\frac{1}{4}$ Model in the same way
- Run a Modal Analysis
- Compare the Eigenfrequencies of the both models, and thus validate it.

