

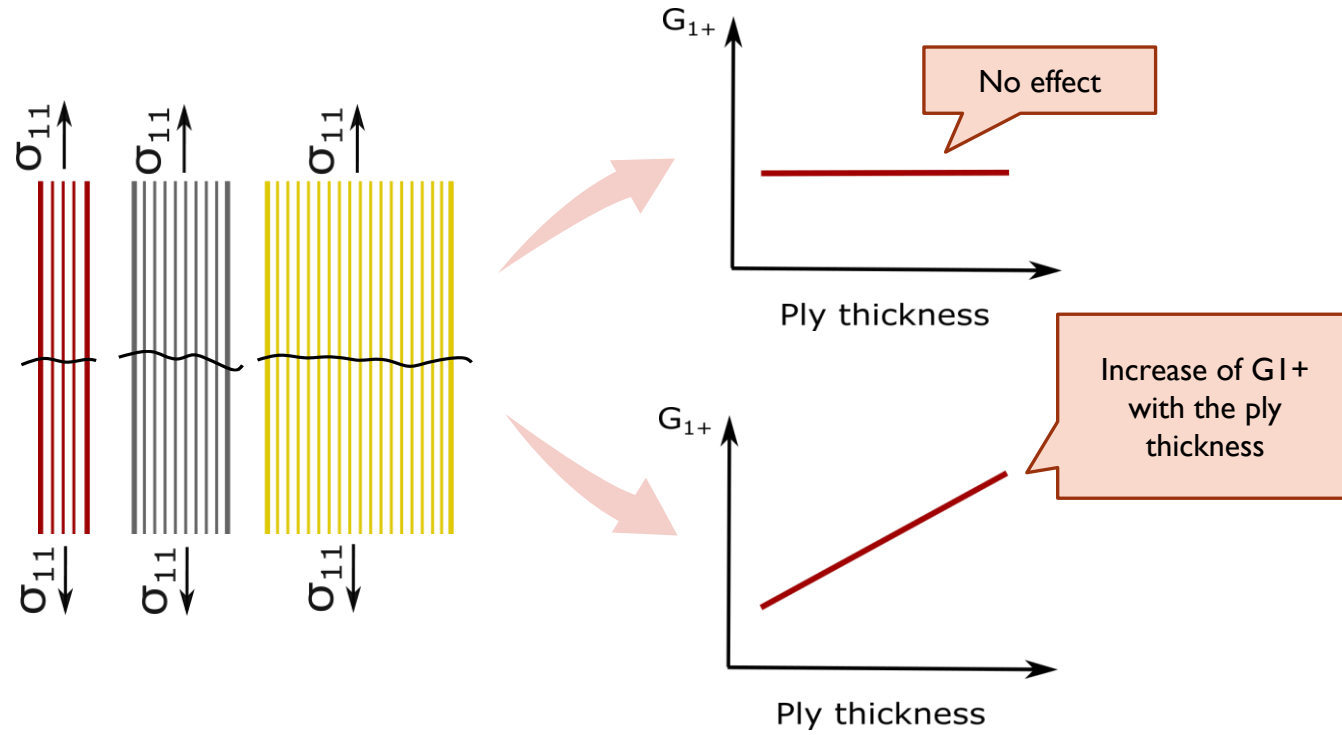
Is there a ply thickness effect on the mode I intralaminar fracture toughness?

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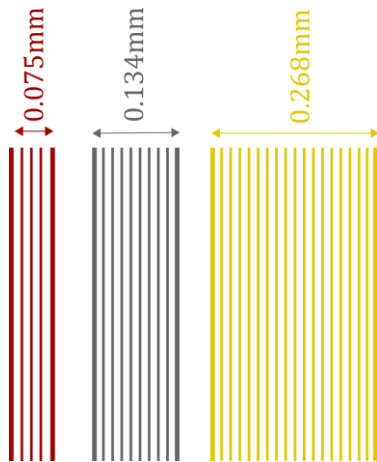
The problem



The methods

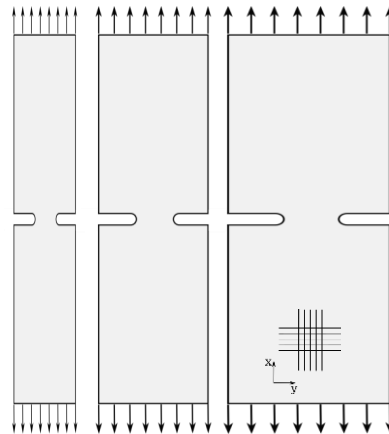
Materials

T700/M21 UD tape



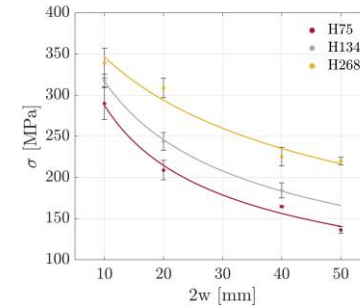
Experimental Methods

Test cross-plyed geometrically similar notched specimens

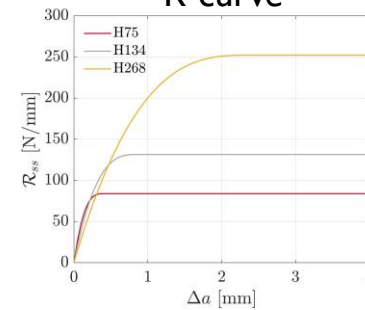


Catalanotti et al. 2014

Size effect law

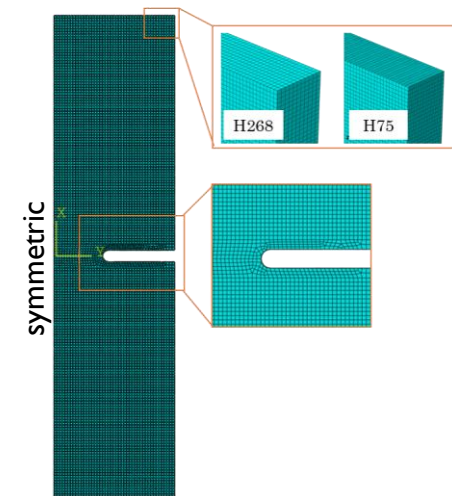


R-curve



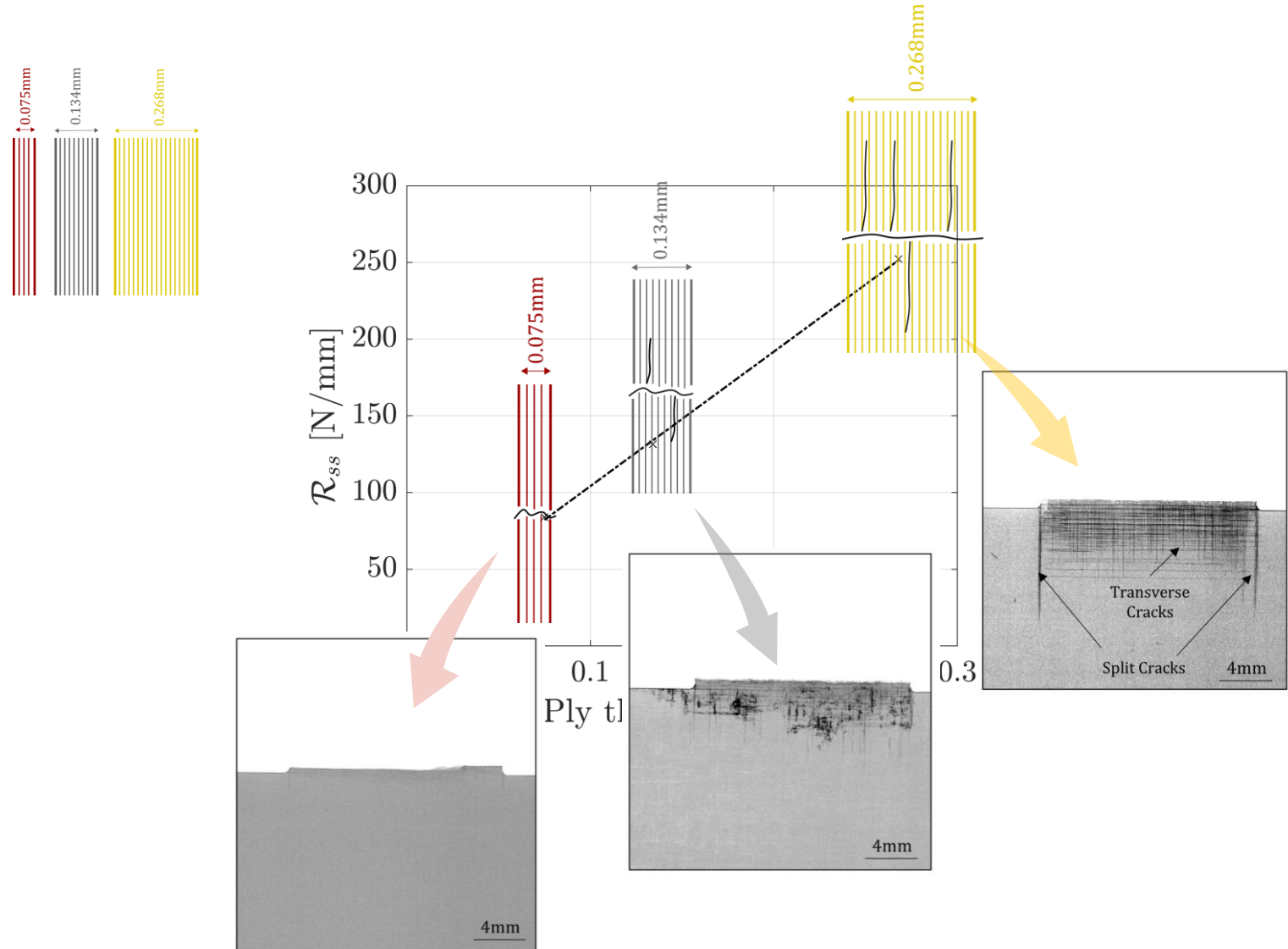
Numerical methods

Complementary numerical analysis

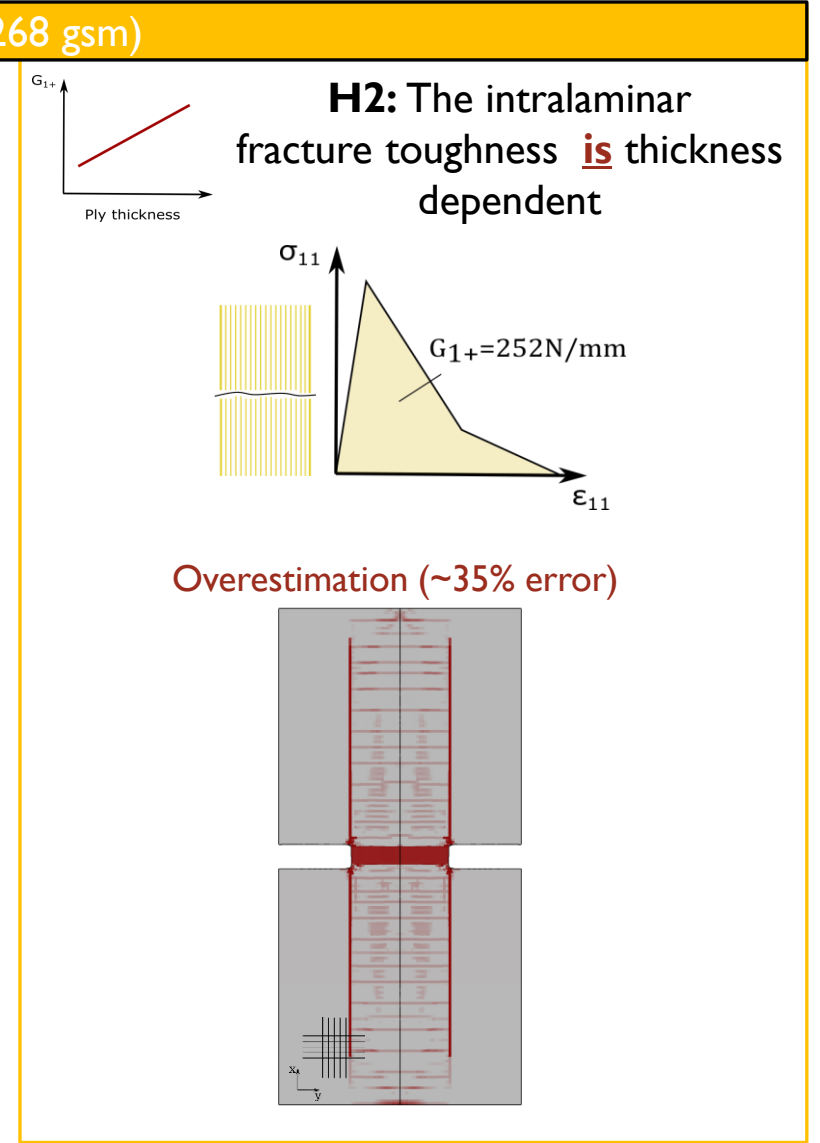
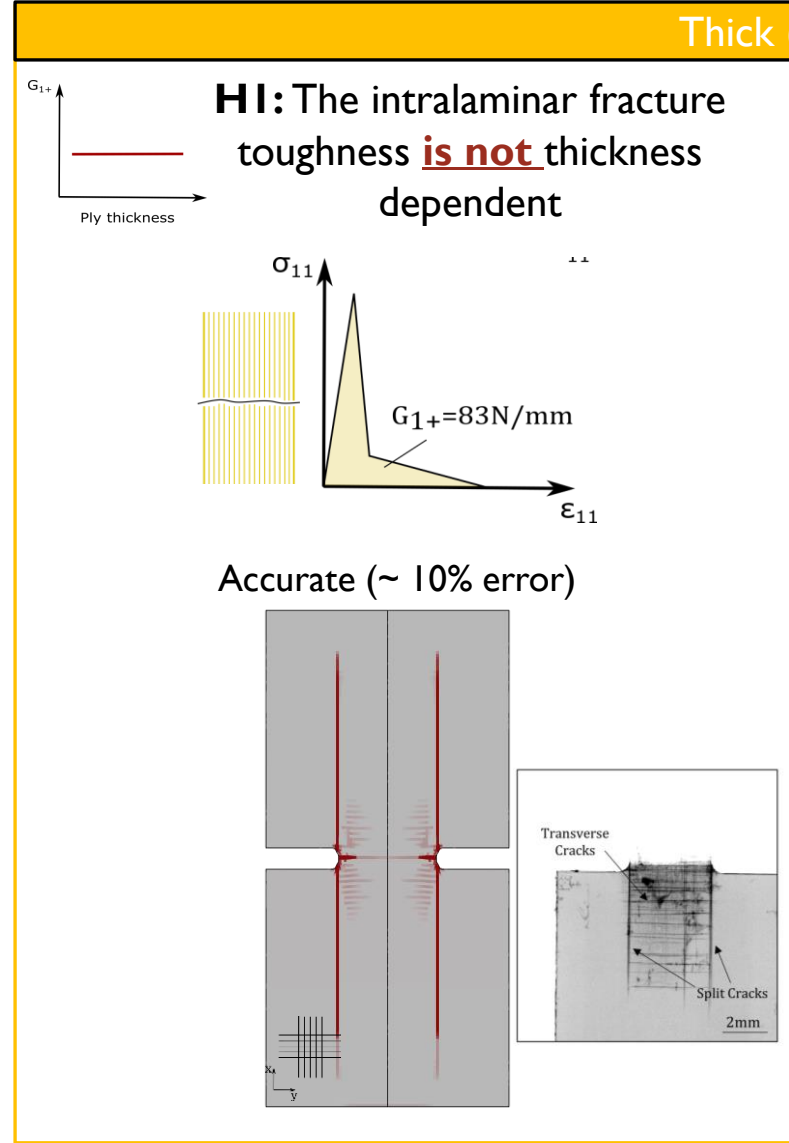
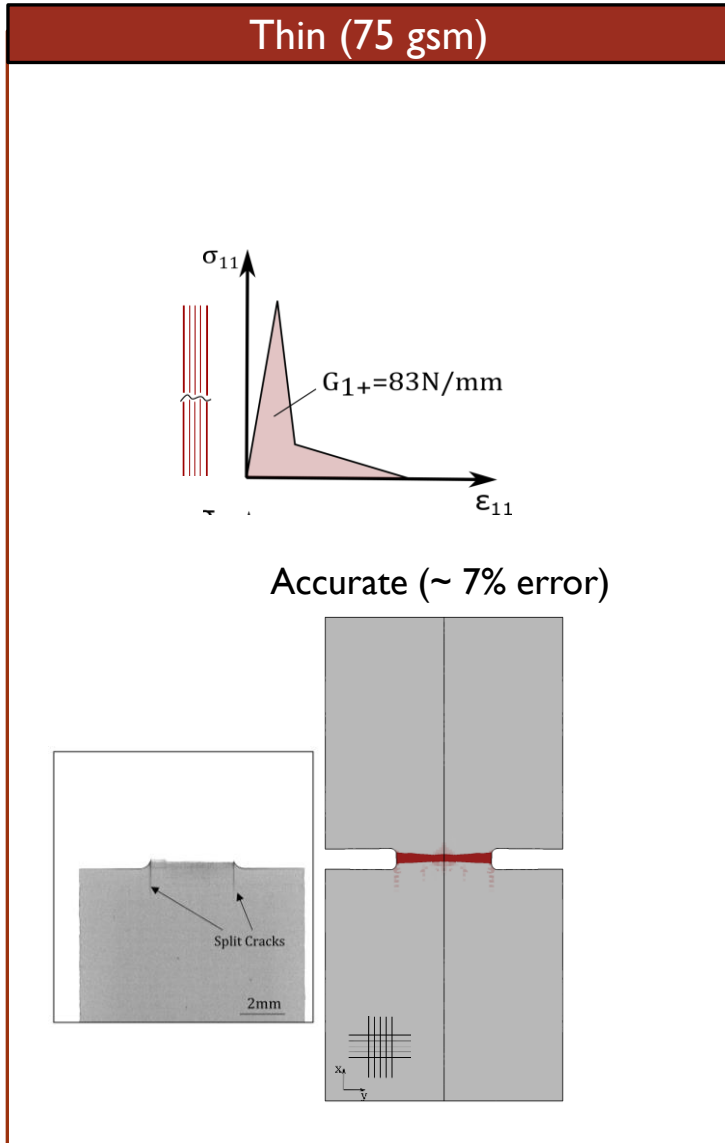


The apparent intralaminar fracture toughness scales linearly with the ply thickness

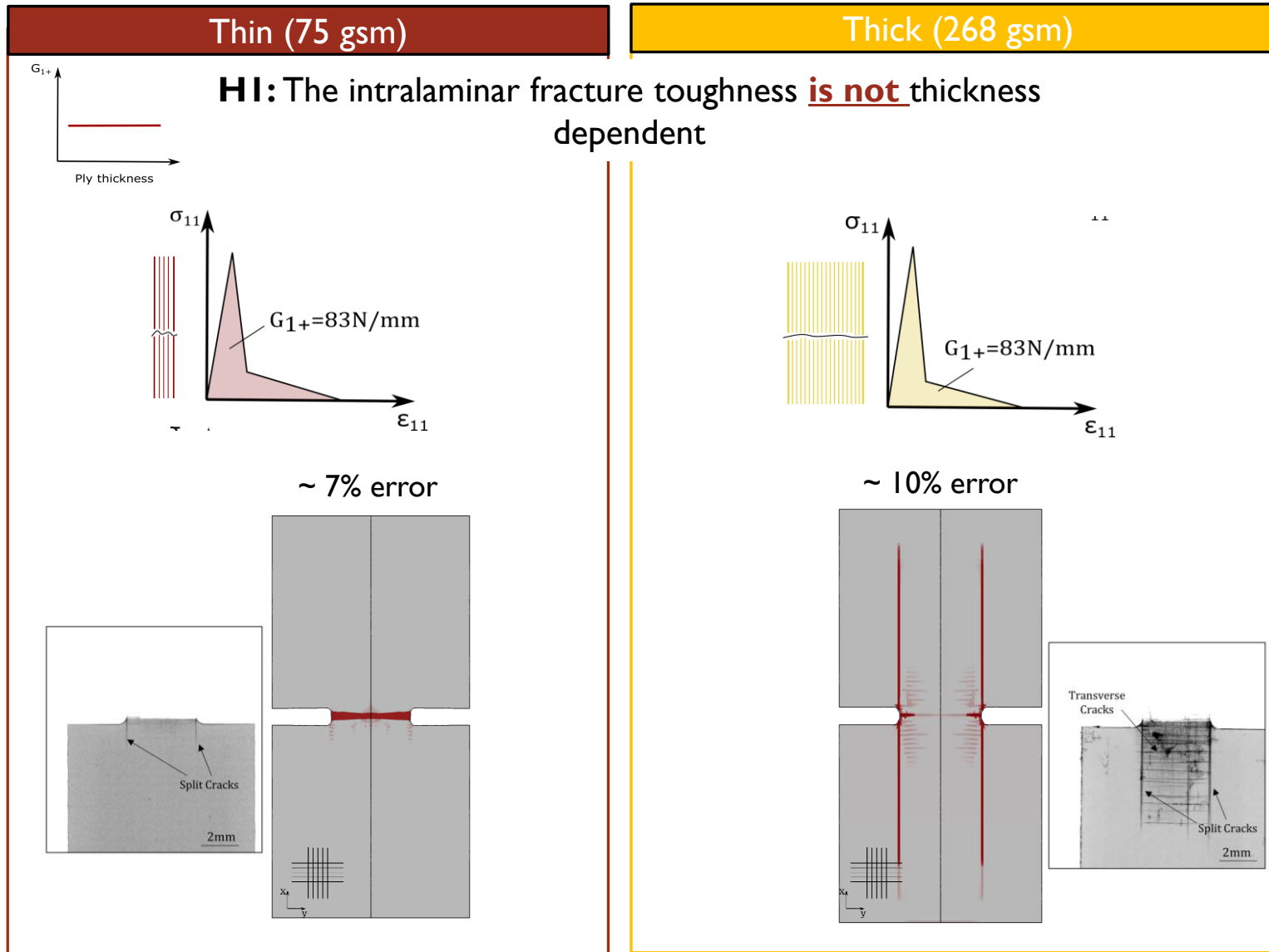
- The **fracture toughness** associated with longitudinal failure was determined for **3 different ply grades**
- The **apparent intralaminar fracture toughness** scales **linearly** with the **ply thickness**;
- This increase is related to the **appearance of split cracks near the notches**;



Simulation of the notched samples shows that the fracture toughness is constant



Simulation of the notched samples shows that the fracture toughness is constant



Conclusions

- The apparent intralaminar **fracture toughness scales linearly** with the **ply thickness**.
- This **increase is related** to the appearance of **split cracks** near the notches.
- The **intralaminar fracture toughness** used in **mesomodels** should **not be scaled** with the ply thickness.