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SimSolid Best Practices

软件版本2019.3.0

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2019年8月1日

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一、几何问题

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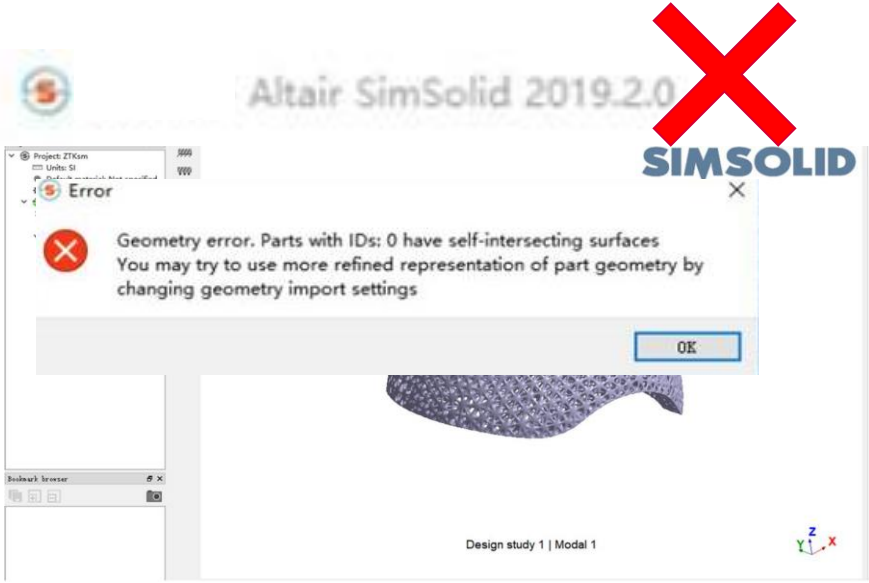
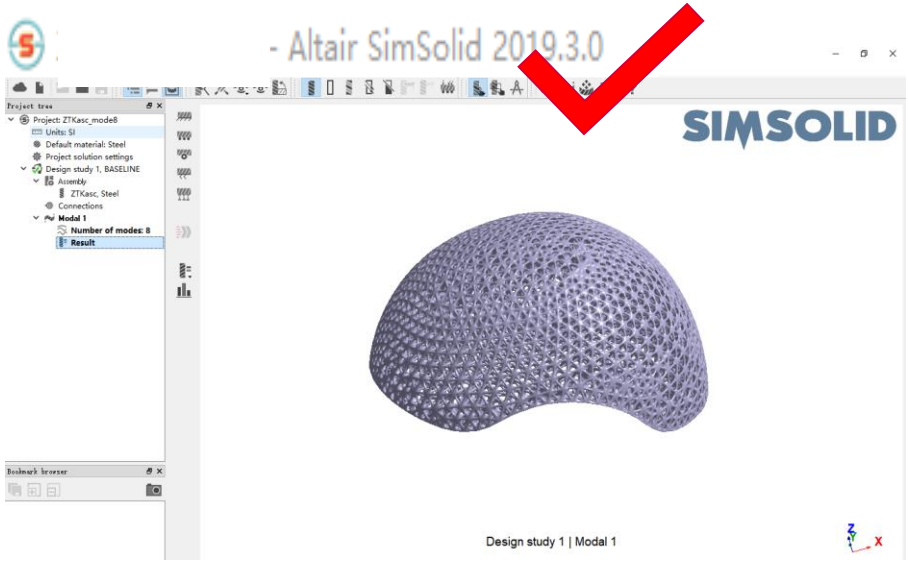
1.使用当前最新版本

建议使用当前最新版本，截至目前（2019年8月1日）SimSolid最新版本为2019.3.0





上图显示，利用2019.2.0导入复杂模型时，提示几何错误。改用2019.3.0，能成功导入。

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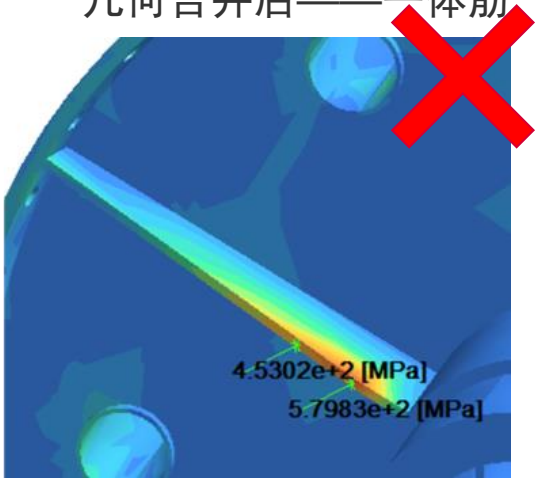
2.不要合并/切割几何

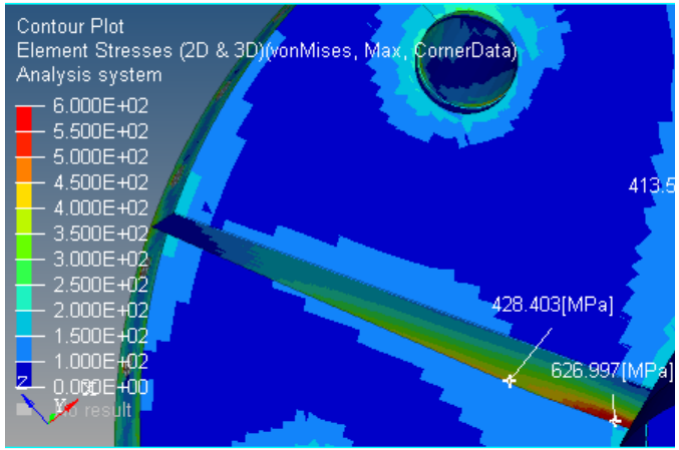
建议导入用于制造的原始几何（actual manufacturable geometry），不要做几何合并或者切割。

几何合并后，导致最大应力大小和位置可能产生较大误差。

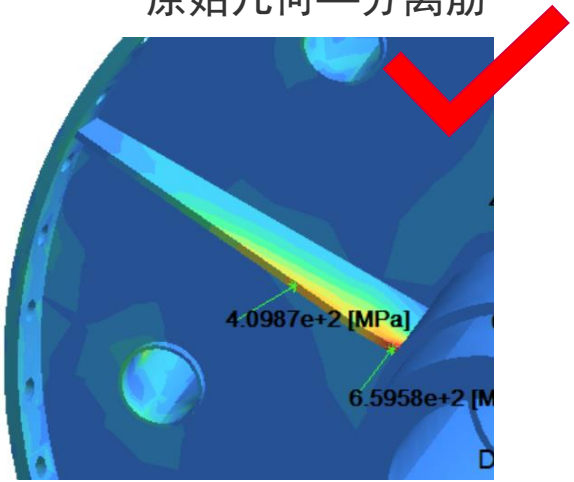
几何合并后——一体筋



OptiStrcut结果



原始几何—分离筋



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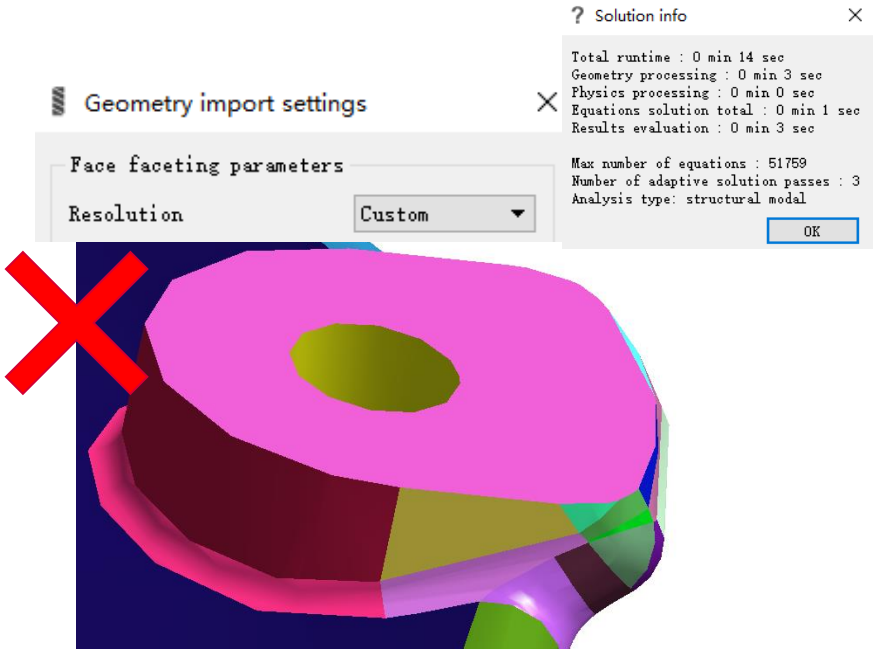
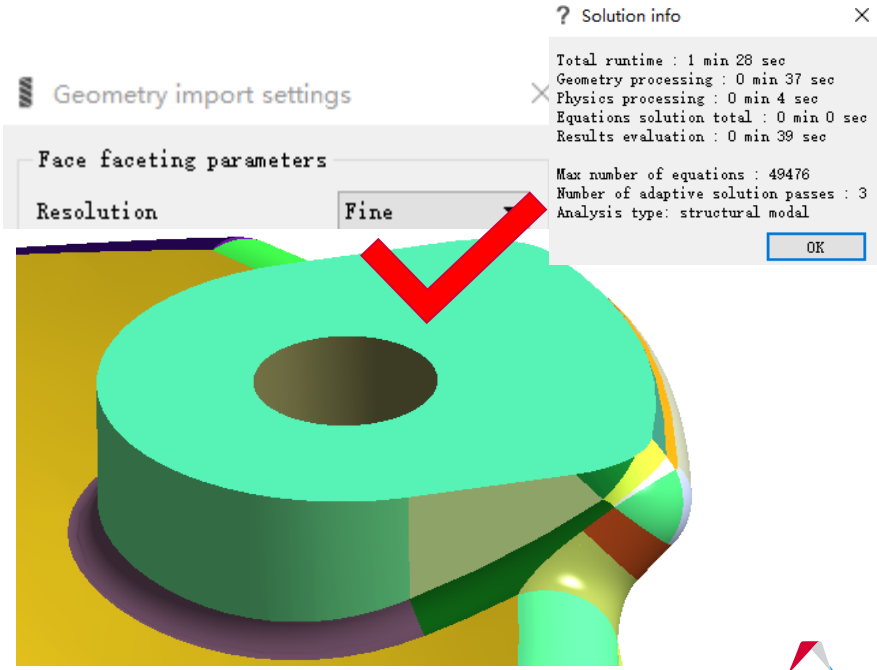
3.几何导入

检查实体曲率大的面，如果比较粗糙，提高零部件的分辨率。

提高的分辨率通常不建议适用于整个装配体，这将大大增加求解时间。





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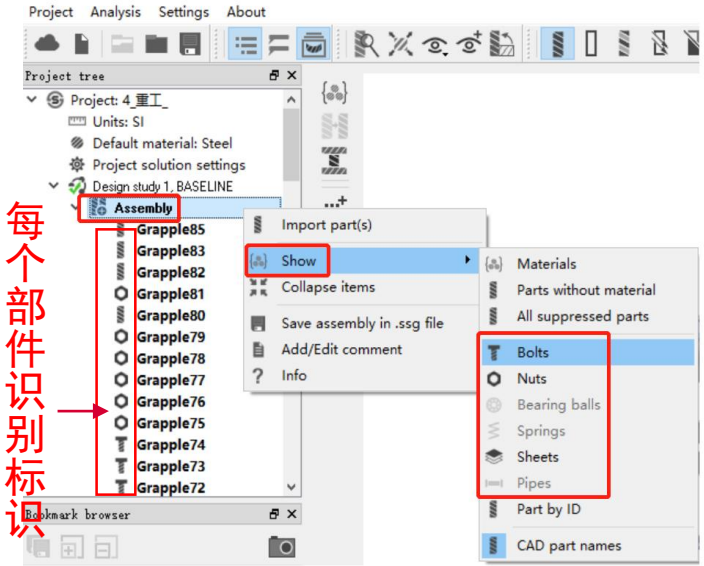
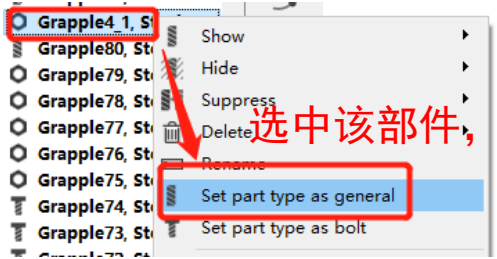
4.几何识别确认

选中Assembly右键，show不同的几何类型，可以确认软件的几何识别是否正确。

Assembly下，每个零部件最前边为识别标识，也可确认几何识别是否正确。若不对，手动修改。



图中高亮的几何被错误地识别为了“螺帽”



选中该部件，右键进行修改。

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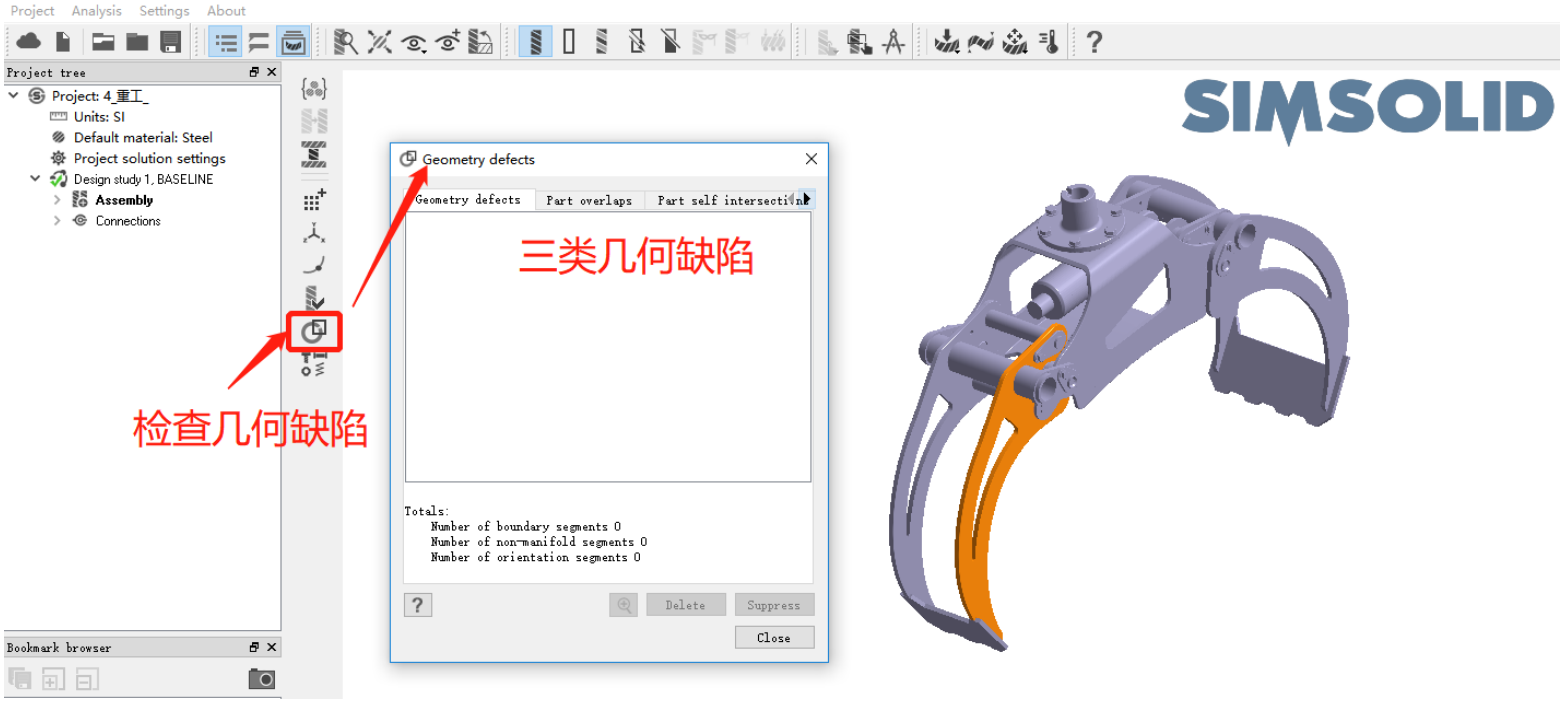
5.几何缺陷检查

自动创建连接前，建议进行几何缺陷检查。



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二、连接问题

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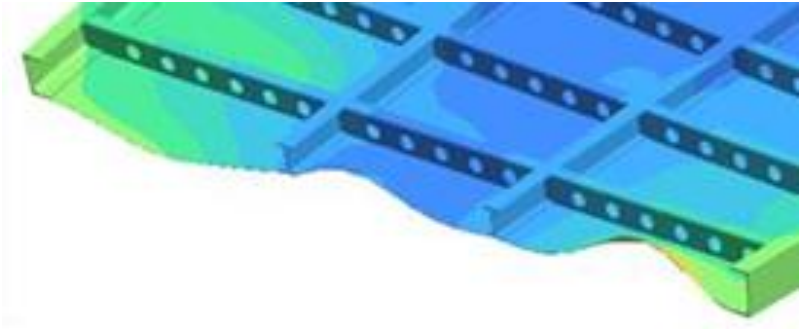
1.薄壳尽量创建焊接

薄壳中，建议尽量创建焊接。

最高分辨率的接触，有时也不能很好地近似此处的连接(2019.3版本)，因为接触面几何太薄。



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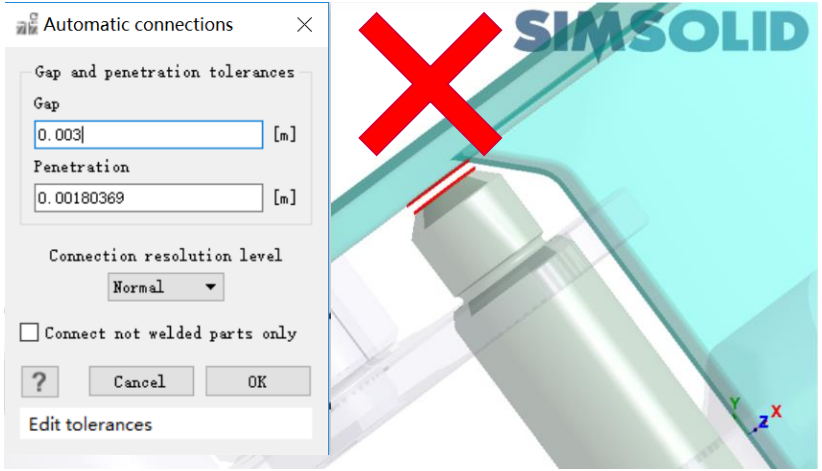
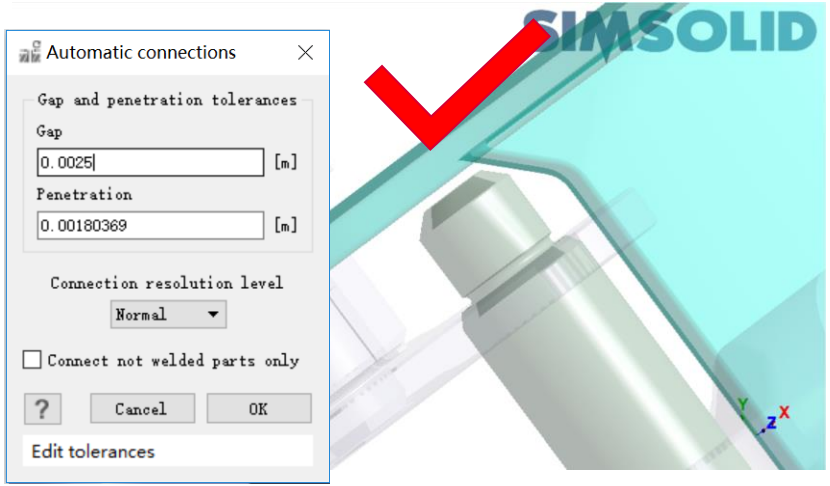
2.使用恰好的间隙与穿透参数

自动创建连接时，间隙和穿透参数值不要过大。





间隙值设置偏大，导致了多余连接。需要删除多余连接，补充缺的连接。

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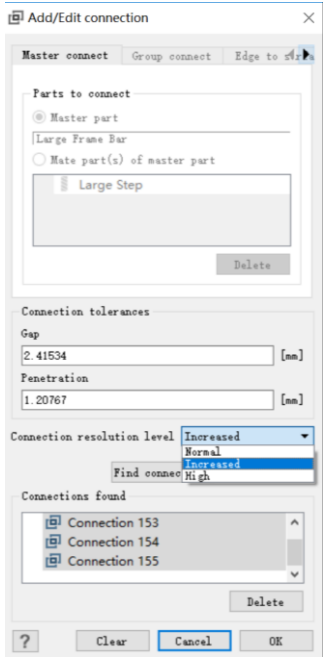
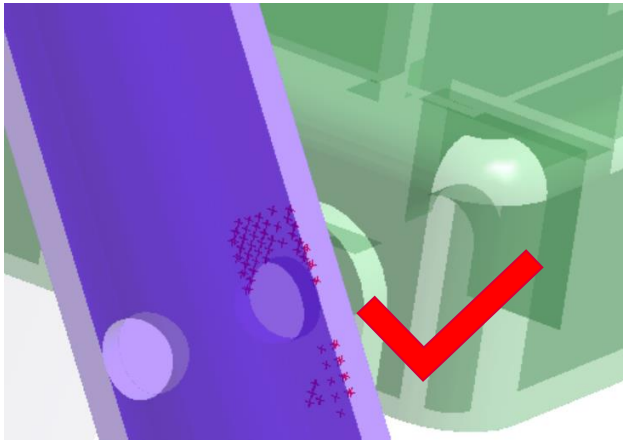
3.提升小面的连接分辨率

结合Review part connection使用。提升小面连接分辨率，确保足够的连接。

连接分辨率会影响求解时间，不要对所有的连接高分辨率。





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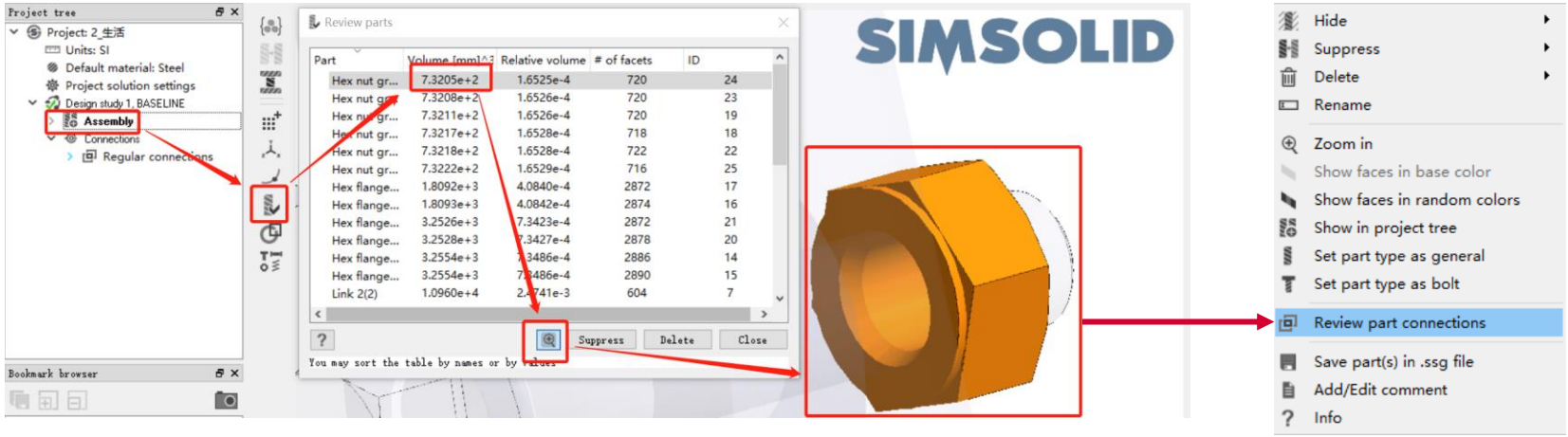
4.确保小部件有足够的连接

Review Parts中，所有零部件按体积排序，查看小部件，确保小部件有足够连接。



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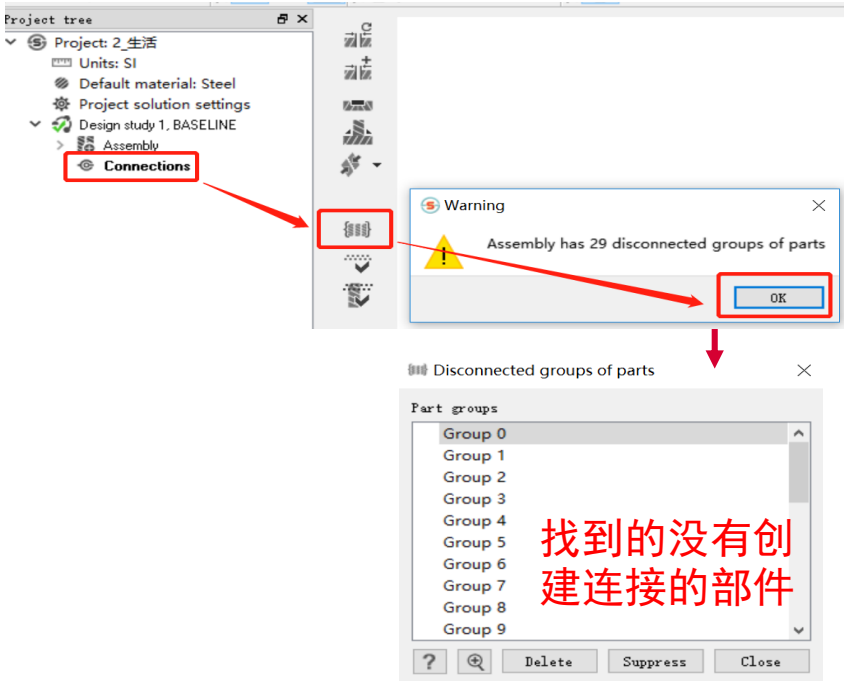
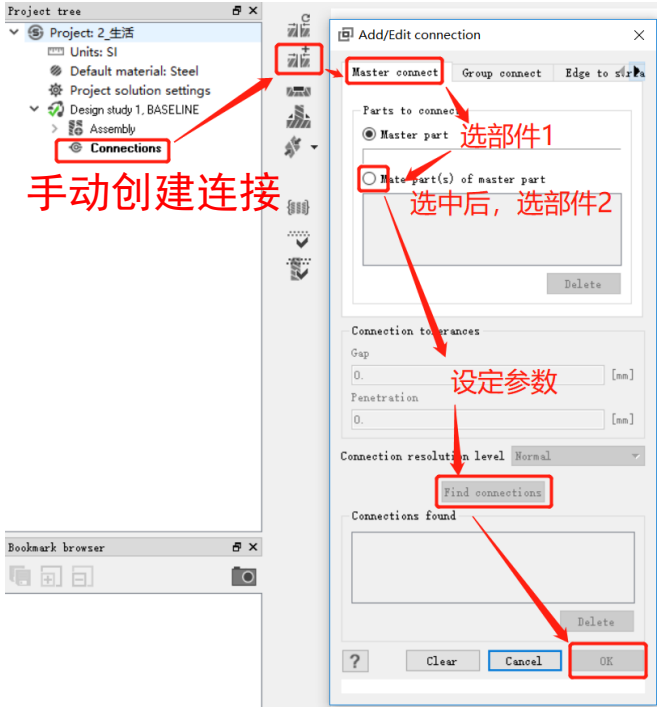
5.检查没有连接的部件

自动创建连接后，因自动搜索参数和几何缺陷限制，导致部分连接没有成功创建。

选中Connection,点击工具 ，检查没有连接的部件。为找到的部件，手动创建连接。





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三、求解问题

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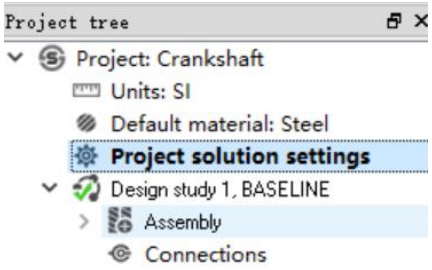
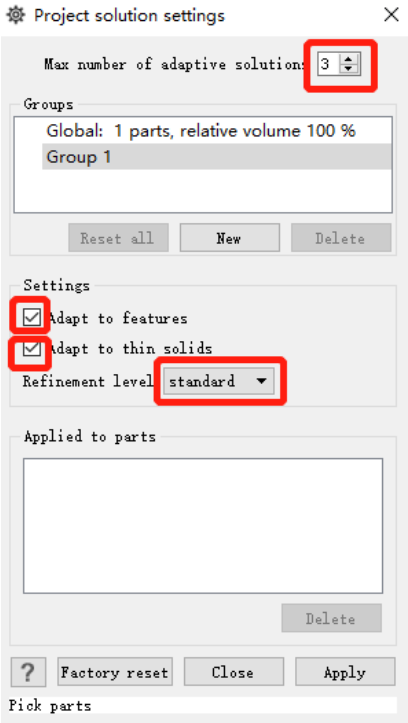
求解设置控制总述





- Max Number of adaptive solution- SIMSOLID采用自适应求解技术，在必要的区域自动完善求解设置以实现最高精度。执行多个求解计算时，每个求解计算会创建初始方程，并且会根据需要在调整方程形式与数量。用户需要做的是指定的最大自适应求解循环次数，并可以应用到全局或者局部部件中。
- Adapt to feature- 用于捕捉模型局部特征的应力梯度。仅用于结构静力分析，不用于模态分析。
- Adapt to thin solids- 用于具有曲率的薄壁件，如果是薄壁平板，该项不适用。
- Refinement level- 为一组零件的局部细化设定等级，可以设置3个等级：低，中，高。

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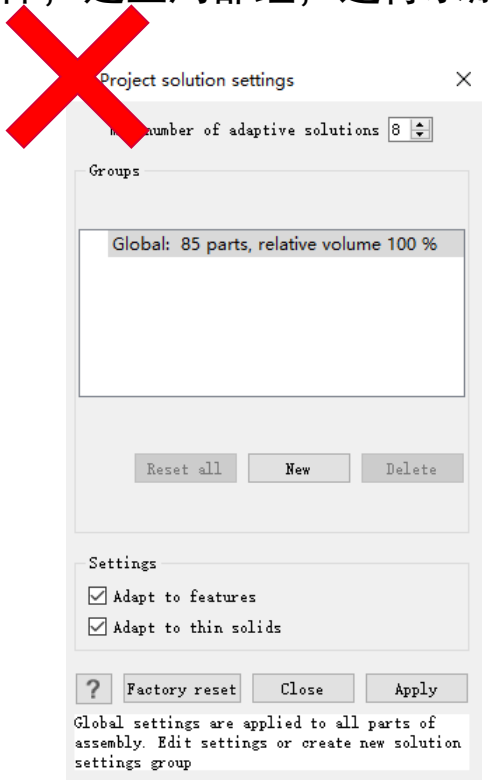
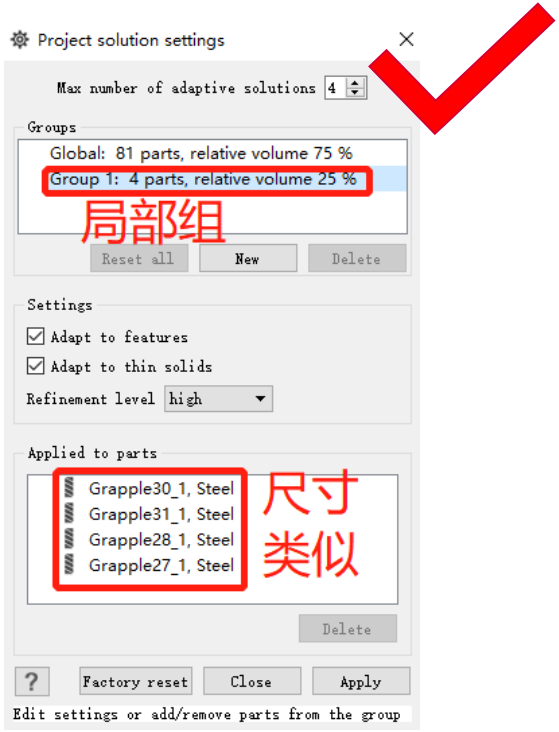
1.求解设置的控制

选择类似尺寸部件，建立局部组，进行求解控制。





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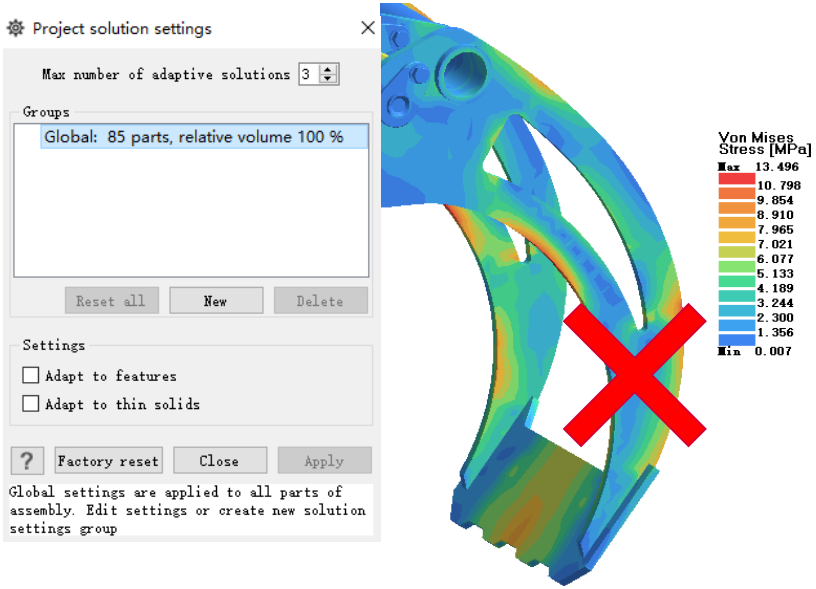
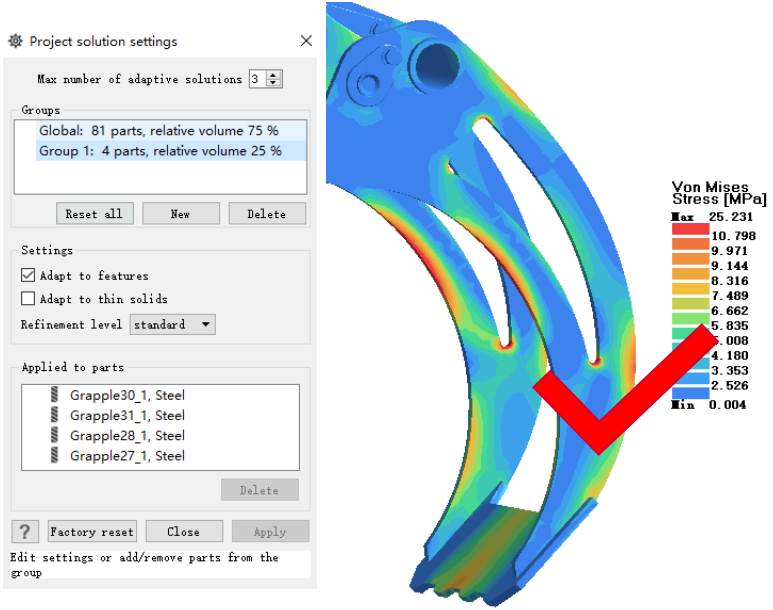
2.求解设置控制之Adapt to feature

Adapt to feature用于捕捉模型局部特征的应力梯度。仅用于结构静力分析，不用于模态分析。





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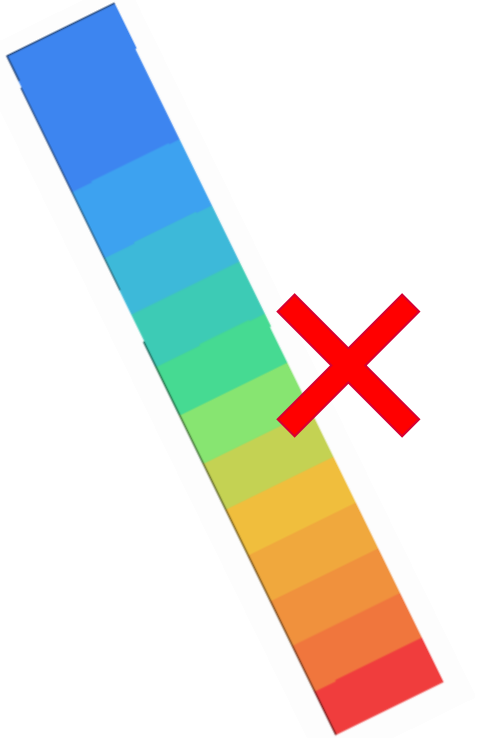
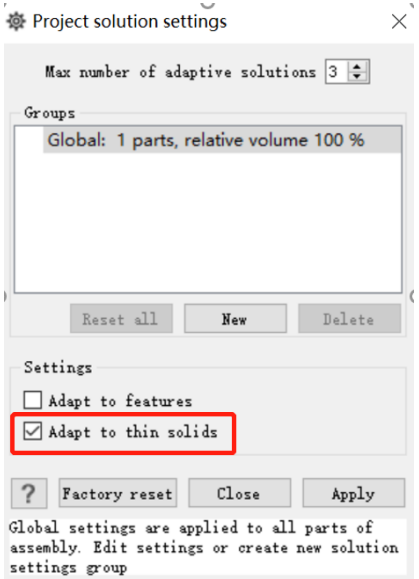
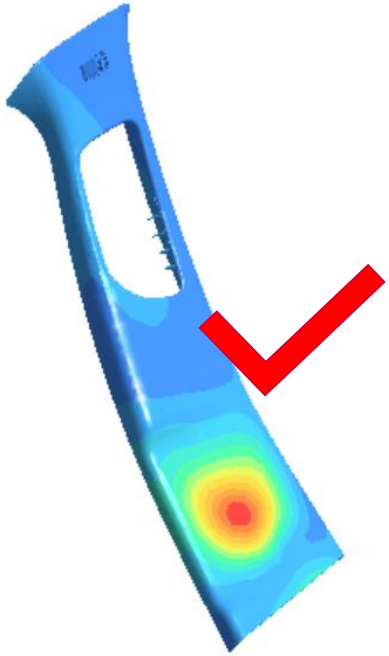
3.求解设置控制之Adapt to thin solids

Adapt to thin solids用于具有曲率的薄壁件，如果是薄壁平板，该项不适用。







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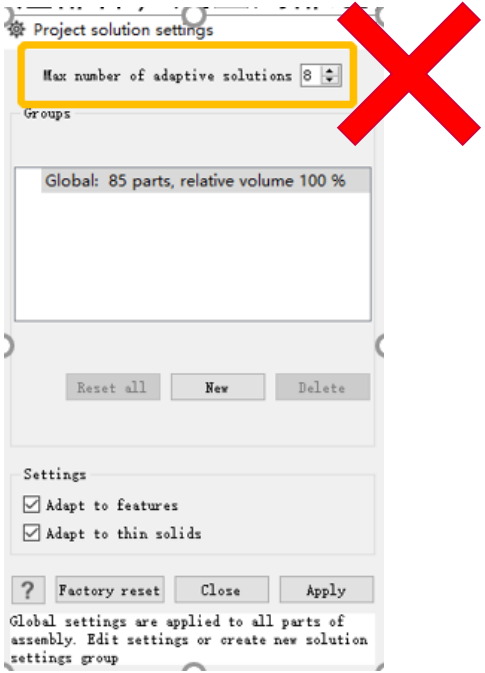
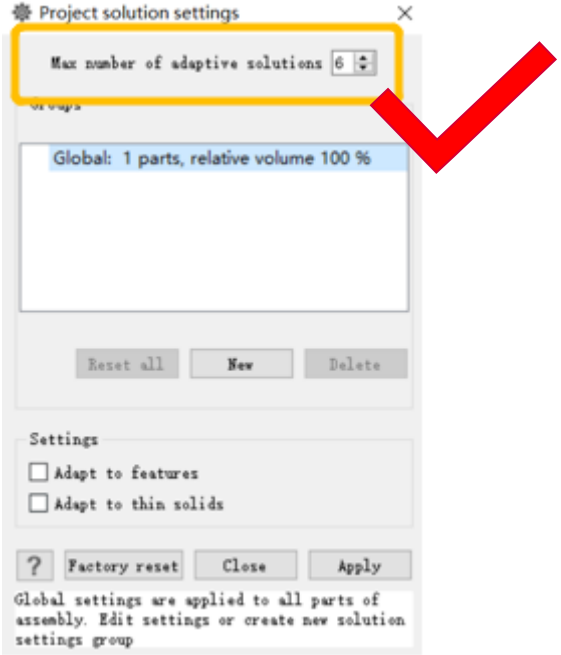
4.求解设置控制之Max Number of adaptive solution

Max Number of adaptive solution指定的最大自适应求解循环次数，可以应用到全局或者局部部件中。实现调整方程形式与数量,在必要的区域自动完善求解设置以实现最高精度；

可提高到4-6，次数越高，求解时间越长。





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