ANSYS WORKBENCH分析应用基础

LESSON01 零件分析基本思路讲解

机械人读书笔记

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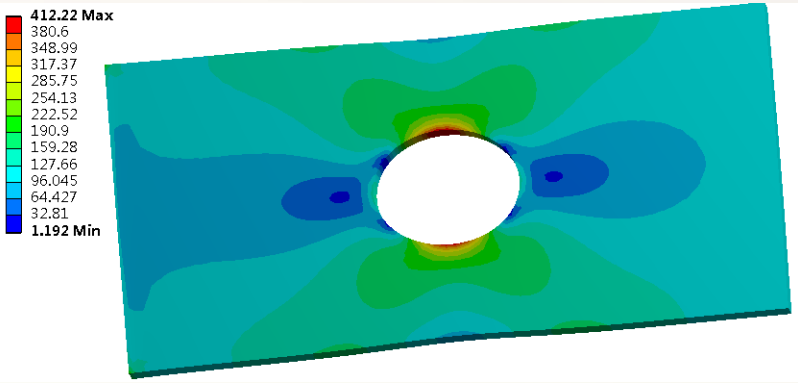
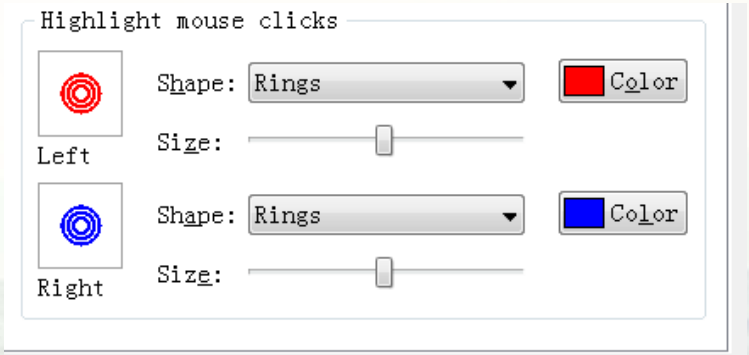
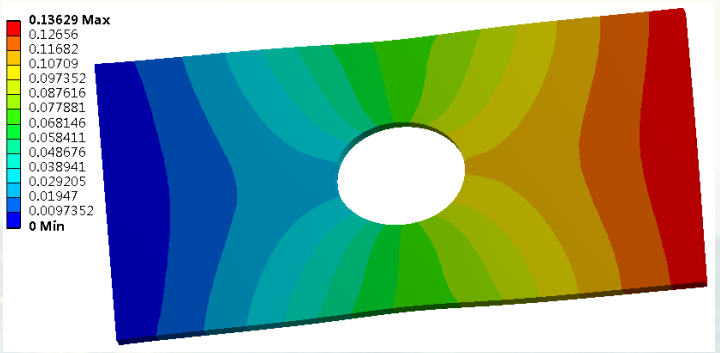
本课重点内容

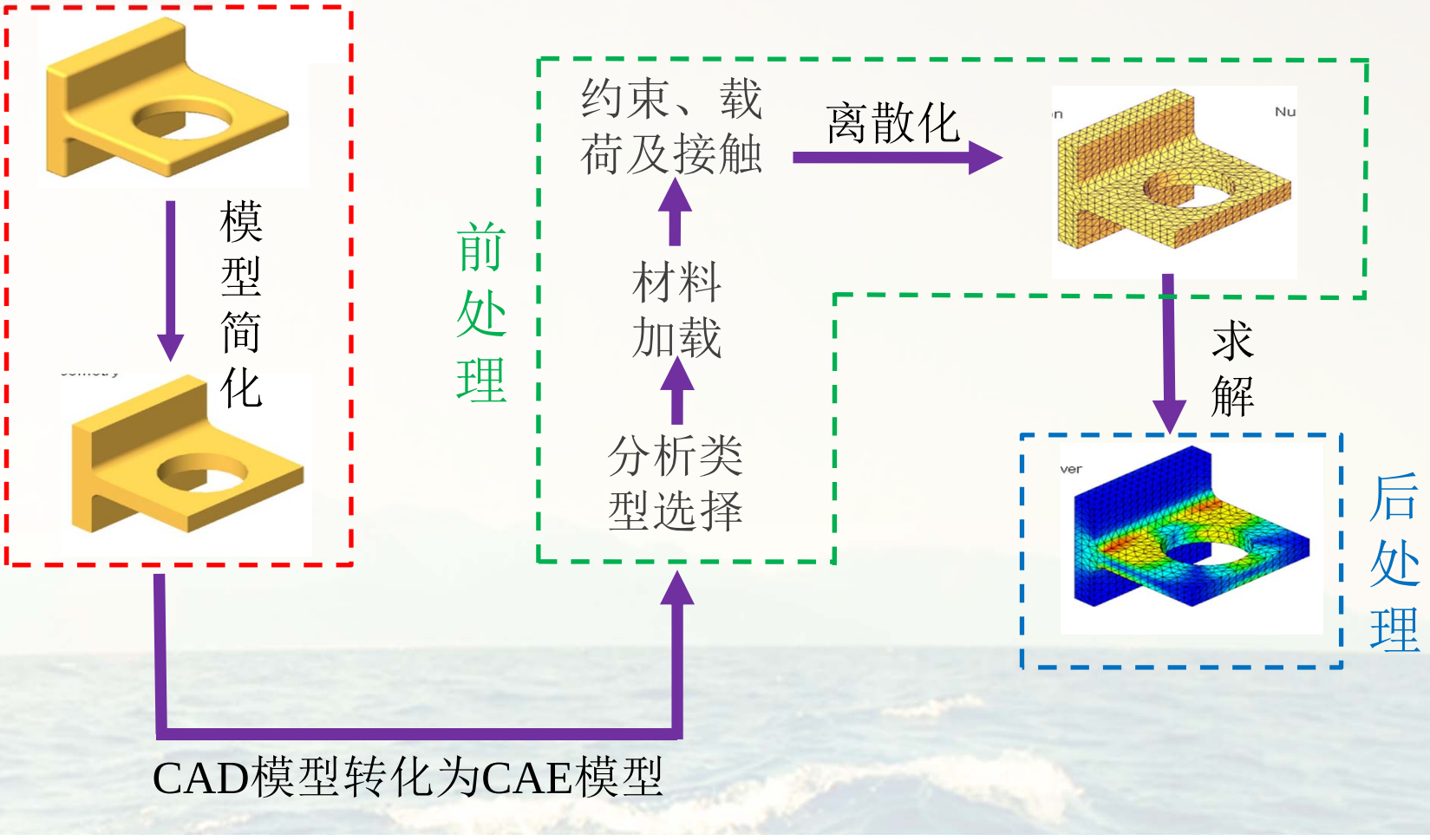
1. 了解操作界面
2. 通过操作了解有限元分析基本流程
3. 后处理功能介绍：缩放和云图色彩设置







分析操作流程

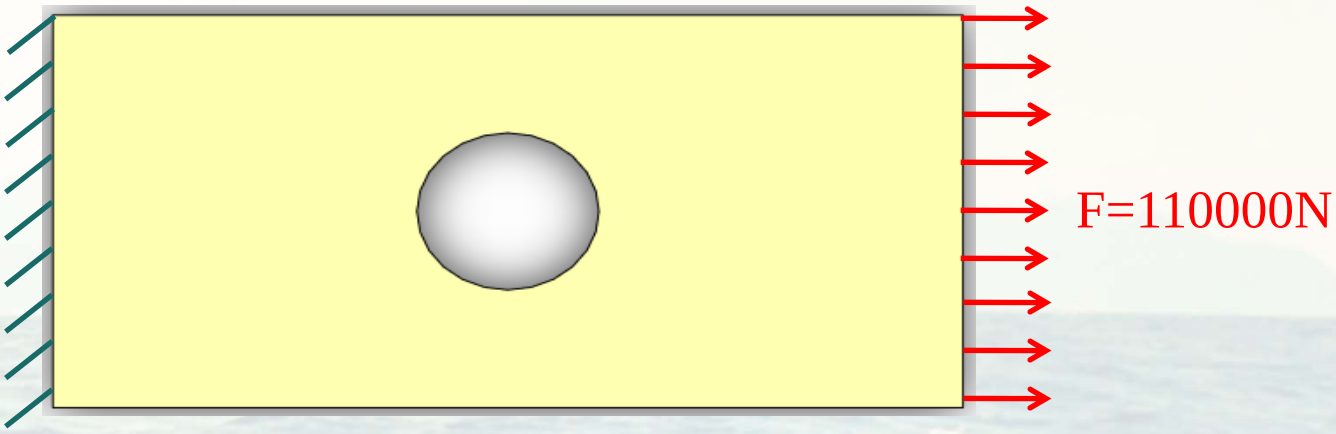


分析实例：带孔矩形板

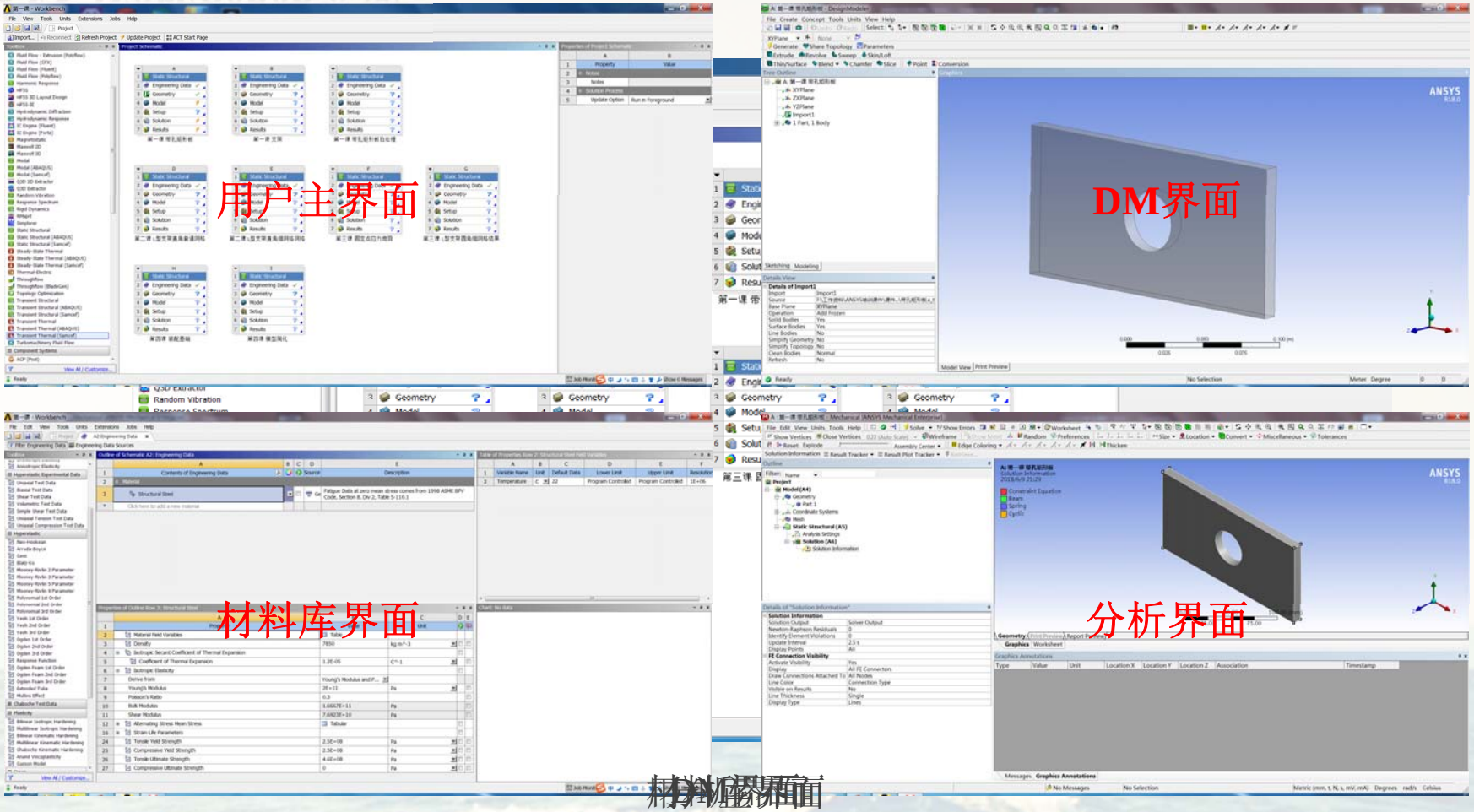
问题描述：带孔矩形板一侧面均布110000N载荷，另一侧固定，利用WORKBENCH求解矩形板的应力、应变和位移，并对分析结果进行解释。

材　　料： Structure Steel

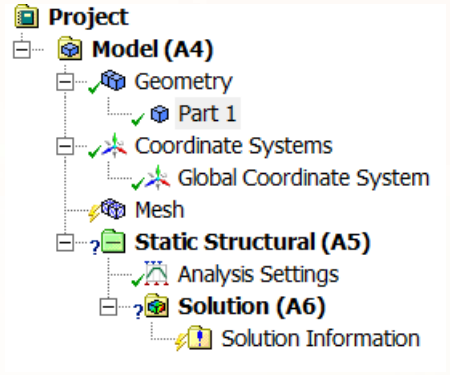
屈服强度： 250MPa



ANSYS Workbench界面



分析流程



Details of "Part 1"

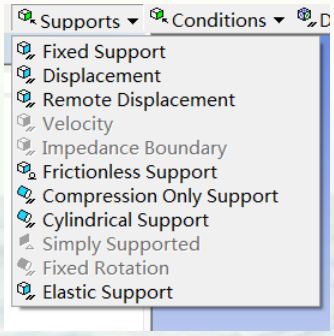
Graphics Properties	
Definition	
Suppressed	No
Stiffness Behavior	Flexible
Coordinate System	Default Coordinate System
Reference Temperature	By Environment
Behavior	None
Material	
Assignment	Structural Steel
Nonlinear Effects	Yes
Thermal Strain Effects	Yes
Bounding Box	
Properties	
Statistics	

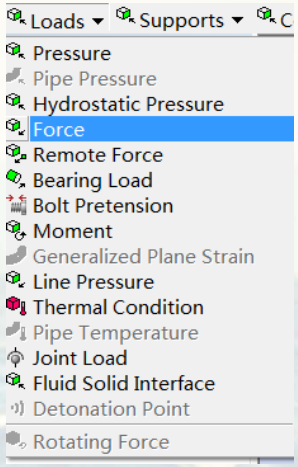
Details of "Mesh"

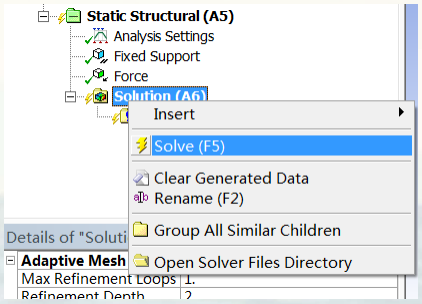
Display	
Display Style	Body Color
Defaults	
Physics Preference	Mechanical
Relevance	0
Element Midside Nodes	Program Controlled
Sizing	
Size Function	Adaptive
Relevance Center	Coarse
Element Size	Default
Initial Size Seed	Active Assembly
Transition	Fast
Span Angle Center	Coarse
Automatic Mesh Based...	On
Defeature Size	Default
Minimum Edge Length	10.0 mm
Quality	
Inflation	
Advanced	
Statistics	

Details of "Analysis Settings"

Step Controls	
Number Of Steps	1.
Current Step Number	1.
Step End Time	1. s
Auto Time Stepping	Program Controlled
Solver Controls	
Solver Type	Program Controlled
Weak Springs	Off
Solver Pivot Checking	Program Controlled
Large Deflection	Off
Inertia Relief	Off
Rotordynamics Controls	
Restart Controls	
Nonlinear Controls	
Output Controls	
Analysis Data Management	







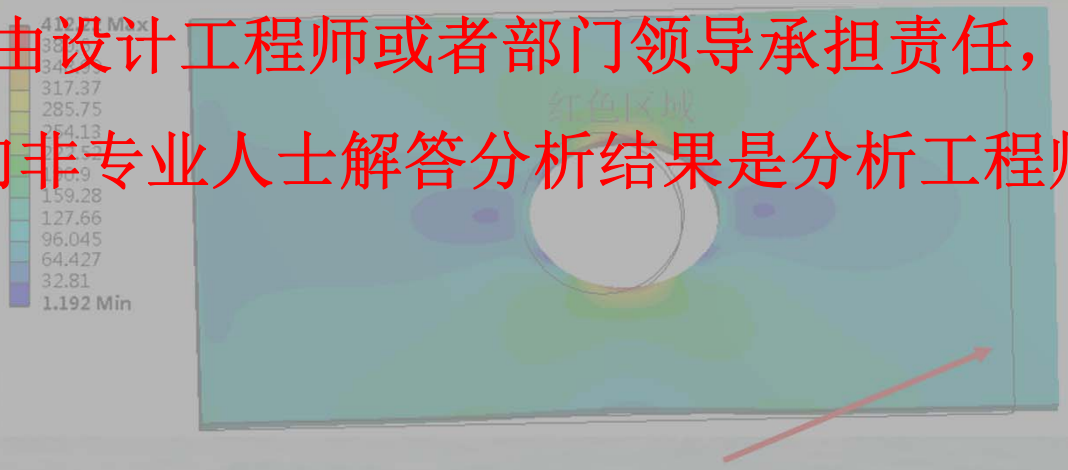
后处理显示技巧

我们在实际应用中经常遇到的问题是当分析工程师将分析结果提交给领导或者设计部的时候，会被非专业人士两个问题搞得焦头烂额：

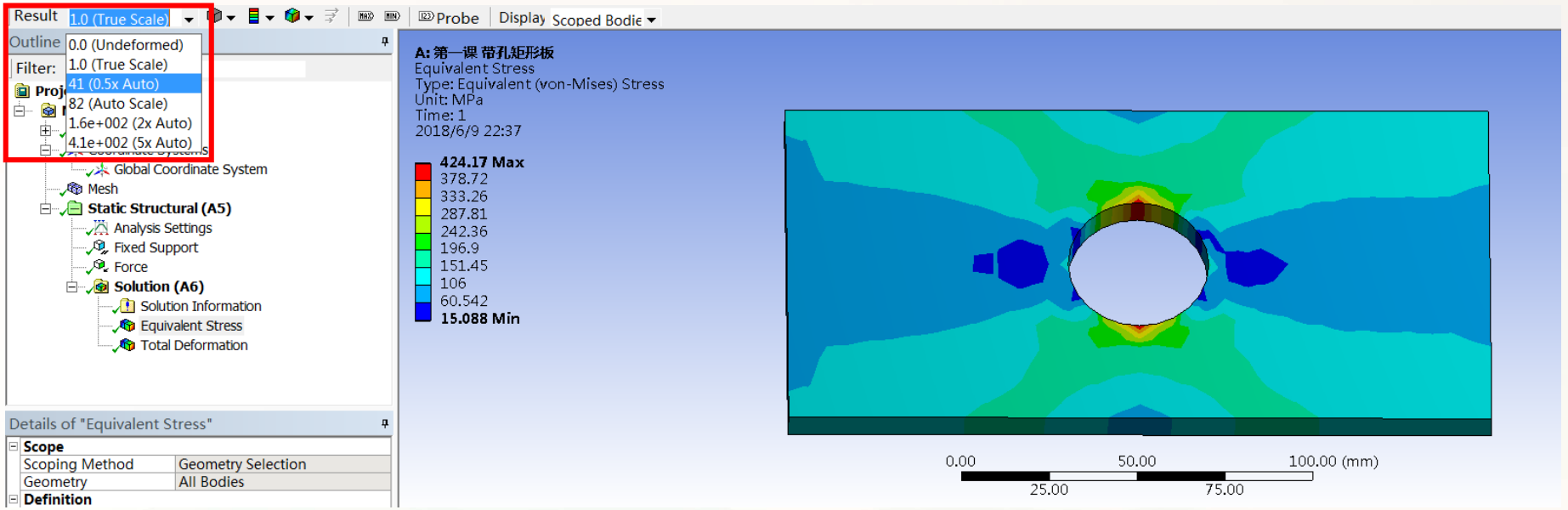
1. 红色区域=危险区域；

2. 变形为什么这么小？

目前，多数企业的分析结果不是由分析工程师承担责任，而是由设计工程师或者部门领导承担责任，因此，有效地向非专业人士解答分析结果是分析工程师的职责！

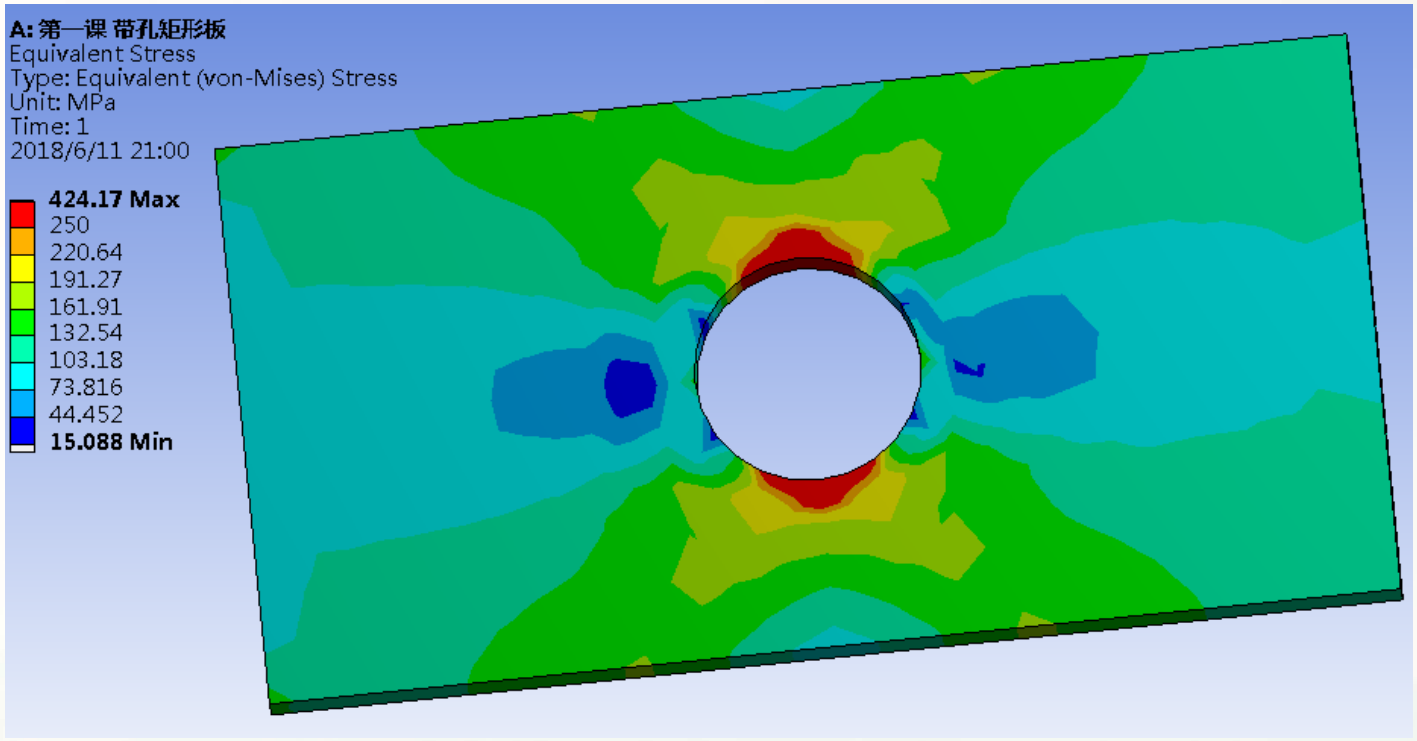


后处理显示技巧——变形比例缩放

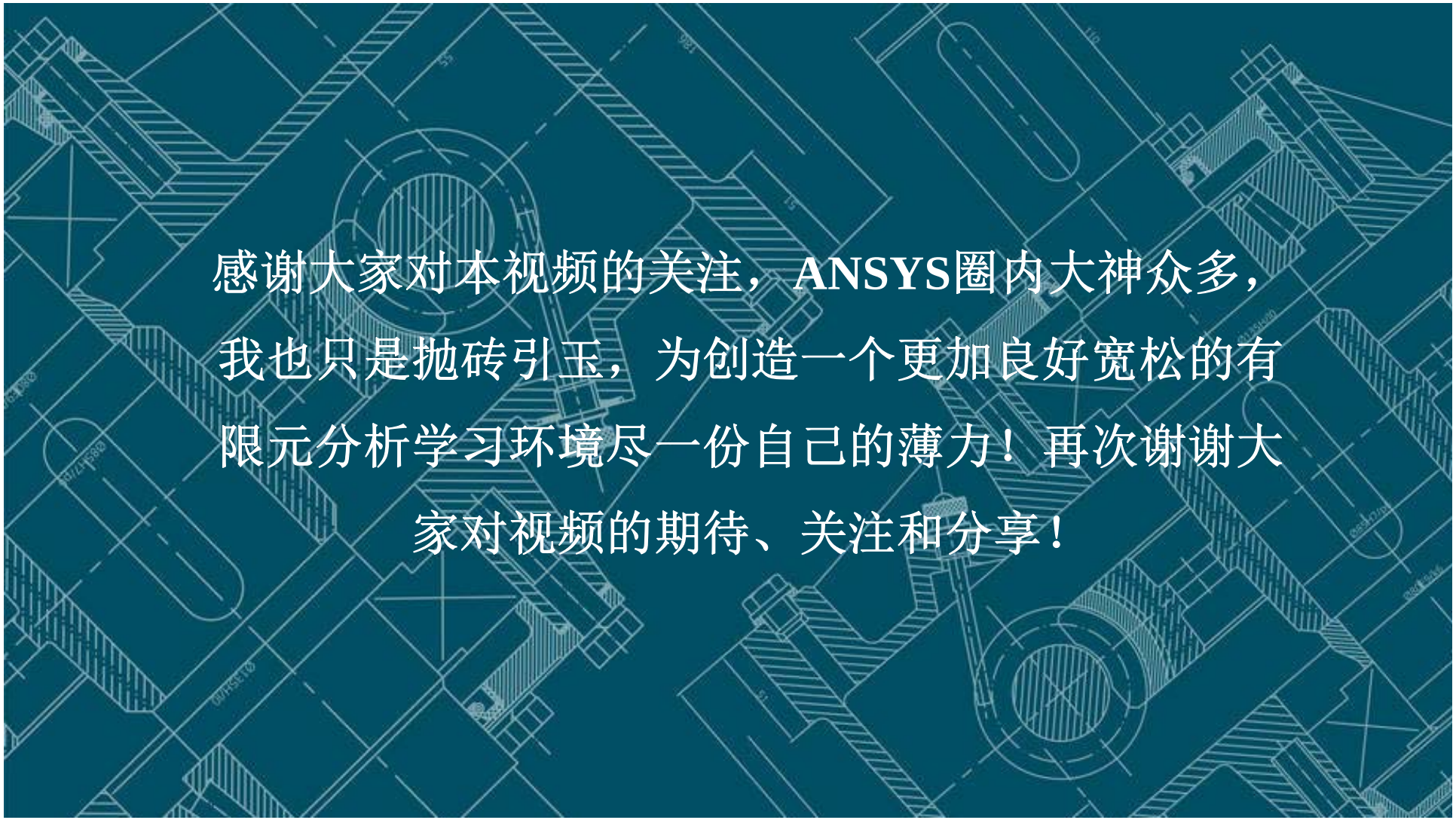


比例显示的重要性

后处理显示技巧——红色和危险点关系



很多对分析不了解的人以颜色区分结构危险点，认为出现红色就是不合格，如何解释该问题？


感谢大家对本视频的关注，ANSYS圈内大神众多，
我也只是抛砖引玉，为创造一个更加良好宽松的有
限元分析学习环境尽一份自己的薄力！再次谢谢大
家对视频的期待、关注和分享！