5.21

问题：

Git使用时，不要将含有.git的 文件夹拷贝到另一个含有.git的文件夹中。

不小心删了以前的workinglog 和 ppt 损失严重！~

180509\_ESR-038654截面尺寸14\*5mm，实验段长度84mm，获得力位移曲线

5.29

气袋折叠Joefold

\\ach-fs01\IT\Simulation\7\_15\_Joefold

Y:\doc\09\_CapabilityImprove\03\_AirbagFolding

Dyna 的后处理可以采用cfile

5.30

折叠气袋算例

Y:\cal\01\_Comp\03\_PAB\287\_180510\_ESR\_038665\_OH\_PAB\_HOUSING\_STRENGTH\_Zheng\01\_Input\Fold

5.31

在需要提取DEFORCE的结果时所设置的弹簧刚度应当尽量小。有两个好处，一个是计算速度会上去，二可以避免其它部件的冲击引起的微小振动将弹簧自身的拉力淹没。另外，增加阻尼单元，阻尼单元有助于降低可能存在的震荡。对于准静态的分析尽量采用隐式求解。

SB模型(由于始终位移增加，力会持续做工，能量持续输入的)分析结果验证标准：

动能/内能 <= 0.05 质量增加<2%

Quasi-static conditions must have been achieved at tensile strength requirement load level, i.e. ratio of kinetic energy/internal energy ≤ 0.05 as in ACES 001 “SB anchor plate tensile simulation” [E1009796](http://plm.autoliv.int/linkto/specific/CAE/E1009796/000).

Maximum mass scaling for the total models with webbing included has to be ≤ 2%.

The limited equivalent plastic strain is used to evaluate the structure’s strength. The tie bars and frame present a failure risk when plastic strains above these strain limits appear over half of part thickness, see Fig. 5.7.1.

Limits are 16% equiv. plastic strain using S500MC, 14% equiv. plastic strain using S550MC. Parts present a failure risk when plastic strains above these strain limits appear over the part thickness.

The evaluating failure criteria of SB components are referred to ACES 903 as [E1220066](http://plm.autoliv.int/linkto/specific/CAE/E1220066/000)

‘Breakage’ is very common in AUTOLIV tests: The test philosophy is “test to failure”. Such tests have, by principle, a large spread in the results. Repeated tests never lead to the exact same result, a simulation does. Therefore, it is impossible to exactly predict breakage with a simulation as it is a matter of statistical chance. A failure criterion, therefore, is always a statistical tool only.

气囊点爆

Criteria to reach at the end of the relaxation to validate the state:

Contact force resultants: Fcntc < 103N,

Internal energies: ∆Eint ≈ 0,

Damping energies: Edamp < 0,10 \* Etot,

Kinetic energies: Ek << Eint,

Total energies: ∆Etot ≈ 0.

For (sheet-)metal parts, plastic equivalent strain is commonly evaluated:  
**PEEQ < εlimit**

For brittle (cast-)metal parts, max. principal stress is appropriate  
**σp,max < σlimit**

For polymer parts, max. principal strain useful, or mises stress (even if „principally wrong“)   
**εp,max < εlimit**

**σmises < σyield**

6.5

采用动力学评定时，要区分应力还是应变评定，如果部件截面中大于breakage strain的应变单元超过厚度的1/3，即可认为失效，并进一步分析失效的形式，包括：Functional failure，功能失效、part buckling部件屈曲、断裂（Breakage）。

如果通过单轴拉伸获得力-位移曲线，转换成应力-应变曲线时，要注意塑性应变=etot – eelas=etot – sigma/E

0606

Joetools 安装

HW\_CONFIG\_PATH

Y:\doc\13\_IT\AutomationTools\HyperWorks\HM\HMCommon

叠气袋过程最好是在本机上开展

Visual 叠气袋 选择view 导入pam的DSY文件(添加

OUTPUT\_FILE\_FORMAT DSYTHP)

1.[05 Simulation\_ESR\_guideline\_CTC](http://alvteams.alv.autoliv.int/sites/ctcplmteam/testing/TestingDVM%20Training%20Material/01-DVM%20%e5%9f%b9%e8%ae%ad%e8%ae%b2%e4%b9%89/05%20Simulation_ESR_guideline_CTC.pptx)

2.叠气袋时，生成的PC的文件要修改版本号和删除file m，求解前最好用visual检查模型质量

Y:\cal\01\_Comp\02\_DAB\362\_180517\_ESR-038398\_CN300M\_DAB\_deploy\01\_input\Cn300\_DAB\_folding\mbp3

3．叠气袋时，刚体部件要在300以内

0620

四面体单元ELFORM =-1/-2

六面体单元ELFORM = 13

Inflator标准http://aamteams.alv.autoliv.int/sites/aaminflatorsimulation/OTC\_Inflator\_Simulation\_Requests/2014%20Simulation%20Data/Forms/AllItems.aspx

DAB分析需要注意接触，还有气袋展开时间TSFRAC曲线的设置。

Troubleshooting:

Case1: EDGED DISTANCE NEARLY \*\*\*\*\*

SOLU: CHECK AND MODIFY THE PENETRAION IN THE MESH\_INI.PC

0622

塑料的应变率和应变曲线可以采用24号卡片和89号卡片，其中24号卡片中的应力应变曲线为有效应力和有效塑形应变，而89号卡片采用的真应力和真应变，两者之间的转变关系：有效应变 = 总应变 - （真应力/弹性模量），其中弹性模量采用单轴拉伸的屈服点（也有人讨论由于循环载荷下材料发生硬化，其真实的弹性模量也会发生变化）

因此，24号卡片的应力应变曲线不应当从0开始，而89号卡片应力应变必须从0开始。当然，需要注意偏移参数的设置。

发生器的对标，可以采用Tank分析，主要对照Glstate中输出的压力曲线和试验给定的Pmax，如果相差不大即可认为当前的发生器符合要求。

选择塑形点区分弹性区和塑形区的方法：

第一种，选取线性区域作为弹性模量，结果会高估塑形应变；另外选择塑形点作为弹性模量，会低估材料弹性区域的刚度。目前，MAT24材料更倾向于第一种方法。

Cowper-Symonds模型的优势，可以光滑外推。两个劣势，以及率相关的屈服现象，因此对高应变率，描述不准确。解决方法，采用LCSR提交一个针对每个应变率的缩放表。有两个优势，一消除了高应变率下噪音，二有能力对高应变率下进行外推。

As can be seen in Figure 3, fidelity to the linear elastic region results in an overprediction of plastic strain because the material continues to be elastic at stresses far exceeding the "linear-elastic" region. On the other hand, using a secant modulus to describe the behavior up to the plastic point results in a material model that significantly under-predicts the stiffness of the material in the elastic region. Currently, with the the MAT24 model, there is no recourse other than to choose, pragmatically, a plastic point that is somewhere in between these extremes, often leaning toward the first strategy so as to be as close as possible to the stress-strain data. Once EMOD has been chosen, it is a simple matter to discretize the static stress-strain and convert the data into plastic strains following the normal rules of the elastic plastic model. Applying the Cowper-Symonds equation, it is now possible to scale this curve to other strain rates. The equation has the advantage of smooth extrapolation without limits. However, since the equation is incapable of truly describing the rate dependency of the yield phenomenon, it cannot accurately scale the plasticity curve to high strain rates. A possible solution is to use the LCSR option, which permits the submission of a table of scale factors for each strain rate. LCSR is an interesting option which allows fidelity to the test data. However, it must be used with caution. High strain rate data is experimentally difficult to obtain so that there is often scatter in the data. This scatter must be smoothed in some way so that the resultant model contains no spurious behavior. Since we know that the Eyring Equation appears to accurately describe the rate dependency of most plastics, the LCSR table can be derived from a best fit of the yield stress v. log strain rate data. This approach carries two advantages: first, the elimination of noise and second, the ability to extrapolate the model to 'higher that tested' strain rates, since LCSR based MAT24 terminates rate dependency computation when the highest strain rate in the table is exceeded. Using MAT24 with LCSR as described above, we can successfully overcome the limitation of the Cowper-Symonds model in the simulation of plastics rate-dependency.

When this slope falls below the modulus E specified in the material card, the material is assumed to have yielded. The treatment of plasticity then follows MAT24, as described earlier.

0625

延伸率为增量与长度只比。

DAB分析应变率是需要考虑: 高低温材料和不同应变率下脆性-塑性转变，甚至有些材料需要调整。

Pros and cons 正反两个方面。

超弹材料：弹性阶段展现出高非线性特性；金属：屈服前有明显的线弹性特性了；塑料：在屈服前已经存在明显的塑形，并且弹性阶段为非线性。 (http://www.datapointlabs.com/testpaks/ls-dyna07/ls-dyna07\_paper.htm) (https://www.dynalook.com/european-conf-2007/methodology-for-selection-of-material-models-for.pdf)

Mat24 塑料材料模拟存在的问题：

塑料在弹性阶段也存在较强的非线性；24号材料用于弹性模量为线性的材料，因此不能准确预测塑料的刚度。

The addition of fiber reinforcements to plastics is a common practice to increase the strength of these materials. In addition to an increase in stiffness, the nature of the failure changes when fillers are added. In the extreme cases, such as highly glass filled plastics, the failure changes from ductile to brittle. Interestingly, with intermediate fiber loadings, there is a gradual change from ductile to brittle failure with the increase in strain rate. This variation in post-yield behavior with strain rate is not easily captured in available material models today.

Nuance 细微差别

Note that the degree of crystallinity and molecular orientation are affected by the fabrication process, which could lead to anisotropic mechanical response in solid polymers

0628

去迅仿科技培训matfem。

0629

Animatorsub NVH \*\*\* NVH报告自动生成

0702

临时提交任务的办法

修改\*\*\*\*.sub 文件

remove the line “#PBS -l lic\_dyn\_ctc\_req1=16,lic\_dyn\_ctc\_stc1=16

删除或者修改这行。

后在，putty 里面用命令 qsub \*\*\*.ker.sub

putty 要进入自己的模型路径

 ANSA 移除logo：Feature（绿色）--〉Parameter（设置特征大小）——〉recognize—〉选中要以去除特征——〉右键design action remove

0705

Hypermesh焊缝建模。可以选择seam—>MIG+L，节点选择焊缝偏移一定距离的节点

wreak havoc with 对什么造成严重影响。somewhat skimpier：一些不足 suffice for 满足什么

卷积运算，反映了事物的相互作用，并且这种相互作用受制于同一个影响因子。

相关运算，在于反应已有事物的内在关联，并不是事物之间的相互影响。

https://www.zhihu.com/question/32067344

一个有趣的机器学习网站

http://www.emergentmind.com/boids

不同焊接形式下FIXTURE的模态分析（对比前三阶模态）

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 第一阶 | 第二阶 | 第三阶 | Note |
| 共节点+rbe3 | 132.4 | 186.2 | 274.0 |  |
| Penta+L | 123.3 | 186.4 | 273.69 |  |
| Rbe2 | 122.7 | 187.5 | 273.7 |  |
| 共节点+rbe3(wo PAB) | 1276.7 | 1360.1 | 2045.7 | Onebody.fem |
| Penta+L（wo PAB） | 1152.6 | 1212.1 | 1847.6 | MIG.fem |
| Rbe2 (wo PAB) | 1272.1 | 1333.3 | 1986.3 | RBE2.fem |
| ANSA\_UITL质量 | 133.1 | 160.8 | 230.8 |  |
| 共节点+rbe3(wo PAB)\_free | 337.5 | 447.3 | 787.1 |  |
| Penta+L（wo PAB\_free | 334.8 | 441.9 | 768.4 |  |
| Rbe2 (wo PAB) \_free | 342.3 | 470.7 | 806.9 |  |

0710

实体之间的rbe2注意自由度只有三个

0711

|  |  |  |  |
| --- | --- | --- | --- |
| 对比维度 | 多进程 | 多线程 | 总结 |
| 数据共享、同步 | 数据共享复杂，需要用IPC；数据是分开的，同步简单 | 因为共享进程数据，数据共享简单，但也是因为这个原因导致同步复杂 | 各有优势 |
| 内存、CPU | 占用内存多，切换复杂，CPU利用率低 | 占用内存少，切换简单，CPU利用率高 | 线程占优 |
| 创建销毁、切换 | 创建销毁、切换复杂，速度慢 | 创建销毁、切换简单，速度很快 | 线程占优 |
| 编程、调试 | 编程简单，调试简单 | 编程复杂，调试复杂 | 进程占优 |
| 可靠性 | 进程间不会互相影响 | 一个线程挂掉将导致整个进程挂掉 | 进程占优 |
| 分布式 | 适应于多核、多机分布式；如果一台机器不够，扩展到多台机器比较简单 | 适应于多核分布式 | 进程占优 |

The flow rule law relates the increment of the plastic strain tensor to the stress state.

The Von Mises equivalent stress does not require material parameters. It is the base of the geometrical equivalent strain.

Polymer materials often exhibit a strong tension-compression asymmetry and a pronounced waist under shear. High-strength steels can show higher yield strengths under biaxial tension.

The yield locus correction does not affect parts of the yield locus that correspond to uniaxial tensile loads.

The hardening curve defines the true stress over true plastic strain in uniaxial tension for the principal anisotropy direction of the material.

The equivalent plastic strain never decreases, because plastic work never decrease.

In reality, the hardening of most materials is not purely isotropic.

The yield stress may increase or decrease with increase strain rate.

When deformations occur at high speed, the temperature increase should be considered with a model that converts part of the plastic work to heat.

Some of the work from plastic hardening is transformed into heat and thus leads to an increase in the temperature.

The Bauschinger effect is best modelled by a combination of isotropic and kinematic hardening.

Ductile normal fracture occurs when microvoids grow and finally coalesce under tensile loads. The fracture surface is rough and lies perpendicular to the principal load direction.

Ductile shear fracture is a result of shear band localization. It can occur under various stress states. The fracture surface is smooth and lies at an angle of 45°to the principal load direction. For sheet materials, the fracture surface can be diagonal over the thickness diagonal or in the sheet plane, depending on the direction of the maximum shear stress.

A full tensorial accumulation of damage would entail storing the damage tensor for each direction, which is not feasible in finite-element simulations. Therefore, anisotropic damage is integrated linearly.

In theory, necks due to tensile instability could be predicted with models with a fine mesh. In practice, the element sizes of shell elements used in industrial simulations can not account for this effect.

The shell theory assumes that there are no stresses perpendicular to the shell plane, and the classic model for instability follows that assumption. But in thin sheet with a pronounced inhomogeneity, there is an out-of-plane component in the stress tensor that cannot be neglected.

In sheet-metal forming, the orthotropy of blank is usually described by the so-called Lankford coefficients or r-values r0, r45 and r90. These coefficients are defined as the ratio of transverse to thickness plastic strain under uniaxial tension under 0, 45 and 90 to the principal orthotropy direction. Isotropic materials have r-values of 1.0 for all directions.

Vulnerable 易受攻击的 entail 使需要，必需；承担；遗传给；蕴含

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Overlook is normally by accident

I was not paying attention, so I overlooked the mistake in my spelling.

unless you are being nice and allow someone else's mistake on purpose

You are clearly sorry you are late, so I will overlook it this once

Ignore is by intent

I saw the spelling mistake but chose to ignore it.

Neglect can be either, but implies deterioration of the neglected and that it is something you should have done.

I was supposed to use a spelling checker but neglected my duties

He was so busy on the computer all night, that he neglected his health and his family

0712

双曲函数cosh sinh tanh ctanh 来自于达芬奇提出的悬链线问题，后续惠更斯、伯努利兄弟都对该问题进行研究，陷入了抛物线的陷阱，约翰.伯努利解决了该问题。

You could use markdown to display your formula: use single $ to indicate latex, or double $$ to center it. You need to format your cell as markdown instead of code

Your cell becomes one of these two lines:

$$(a+b)^{2} = a^{2}+2ab+b^{2}$$

$(a+b)^{2} = a^{2}+2ab+b^{2}$

Python setuptools 库的应用

http://yansu.org/2013/06/07/learn-python-setuptools-in-detail.html

0713

Peculiarity 特殊的

采用setuptools 创建 wheel egg 和exe

要创建setup.py

from setuptools import setup, find\_packages

setup(

name = "Autolivlib",

version = "3.1",

packages = find\_packages(),

author="Yujin Wang",

author\_email="Chaos1984@163.com",

package\_data={'':['\*.txt','\*.pptx','\*.tcl','\*.mvw','\*.png','\*.jpg','\*.jpeg','\*.ppt','\*.bat']},

include\_package\_data = True,

license = 'LICENSE'

)

如果包含其他文件中的东西，要在所需文件中加入\_\_init\_\_.py文件

Windows exe python .\setup.py bdist\_wininst --no-target-c

Wheel python .\setup.py bdist\_wheel (注意setuptools和whell是最新版本)

Twine

参考：https://blog.csdn.net/xumesang/article/details/50522358

https://blog.csdn.net/pfm685757/article/details/48651389

https://packaging.python.org/tutorials/packaging-projects/

https://github.com/pypa/twine

采用twine 进行上传

0718

RADIOSS+MODLE3D: Y:\doc\09\_CapabilityImprove\40-MD-Radioss\_in\_HW

DYNA年会关于优化方面的

Y:\doc\09\_CapabilityImprove\26\_LSTC\_Conference\15th\_International\_LS-DYNA\_Conference\_2018\TopologyShapeOptimization

Y:\doc\09\_CapabilityImprove\26\_LSTC\_Conference\15th\_International\_LS-DYNA\_Conference\_2018\Optimization

0723

Joetools 安装

HW\_CONFIG\_PATH

Y:\doc\13\_IT\AutomationTools\HyperWorks\HM\HMCommon

725

ESR-040968

Y:\cal\01\_Comp\02\_DAB\329\_170918\_ESR-031538\_check\_the\_deployment\_result\_of\_ASW7\_1\_LYS

Catia数据

\\ctc-app01\CAD\_Files\11.DAB\Xiuwen Yang\01 GDP\19 ASW7.1\For Internal\DAB Detached\8D\CAE Report\Cushion

Cover opening

Y:\doc\09\_CapabilityImprove\01\_ACES\ACES\_202\_DAB\_cover\_opening\E597526\_000

0727

AIRBAG相关资料

CPM 缩写（corpuscular partical ）

Y:\doc\09\_CapabilityImprove\24\_Dyna\_CPM\_Training

801

焊缝问题对模态的影响

Y:\cal\01\_Comp\08\_others\Anne\_Wang\fixture\_sweld\_study\02\_run\_common\_node\_optistruct

802

气袋材料厚度

Z:\1\_Database\1\_1\_Simulation\_data\09\_Material\FABRIC\CAE\_card\_latest\Ls-Dyna

803

Inflator等材料库

http://aamteams.alv.autoliv.int/sites/aaminflatorsimulation/OTC\_Inflator\_Simulation\_Requests/2014%20Simulation%20Data/Forms/AllItems.aspx

813

K224-PG8\_PG6\_K-FPG8材料

Z:\1\_Database\1\_1\_Simulation\_data\09\_Material\CTC-Materials\DAB\_Cover\_MAT

815

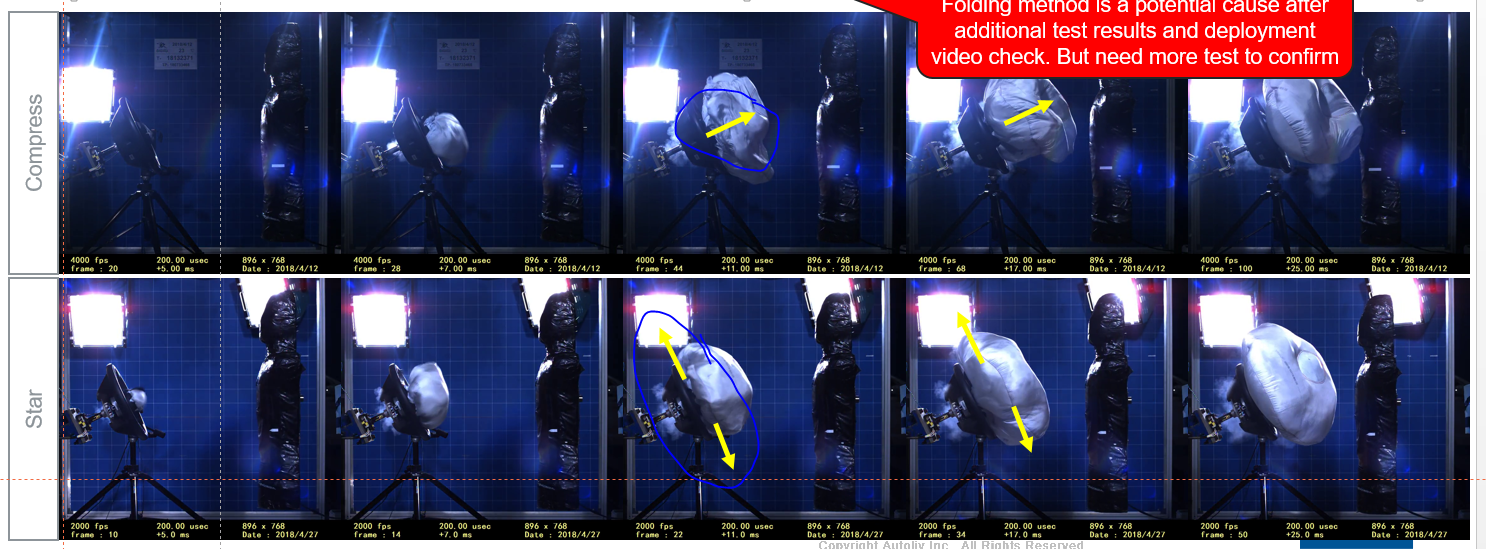
Gissmo文档

Y:\doc\09\_CapabilityImprove\14\_Ls\_dyna\_training\GISSMO\_DYNA

816

Primer中可以计算当前的DT2MS值所产生的质量增加，解决模型由于质量增加引起的问题。

0820

折叠形式对气袋的影响：压缩折叠展开方向首先为驾驶员方向，而星形则是气袋的辐射方向（径向），从而影响回弹力

DYNA 单元

Y:\doc\09\_CapabilityImprove\14\_Ls\_dyna\_training\DYNA\_Element\_introduce

824

ESR-042503 材料检查cover的材料不知道是不是准确，需要确认

827

https://www.eng-tips.com/viewthread.cfm?qid=325574

这里面有谈到gap单元模拟非线性模态的问题

*829*

Cover 单元对比：Y:\cal\01\_Comp\02\_DAB\390\_180820\_ESR-042411\_GLY\_FE5\_DAB\_Deploy\_HYQ\02\_Run\02\_element\_form\_research

*IC相关*

Y:\doc\09\_CapabilityImprove\01\_ACES\ACES\_109\_IC\_bracket\_mounting

Y:\doc\20180404\_backup\Ford\006\_Ford\_D568\03\_IC\05-CPM\_Cooperation\_ARUP\_FORD\03\_ARUP\_Feedbacks\20150310\_ARUP\_model\_Report

Y:\doc\03\_Sim\_GDP\GDP\_from\_02\_Sys\06\_GEP\_IC\_OOP\04\_Run

*0903*

*带有预紧力的模型*

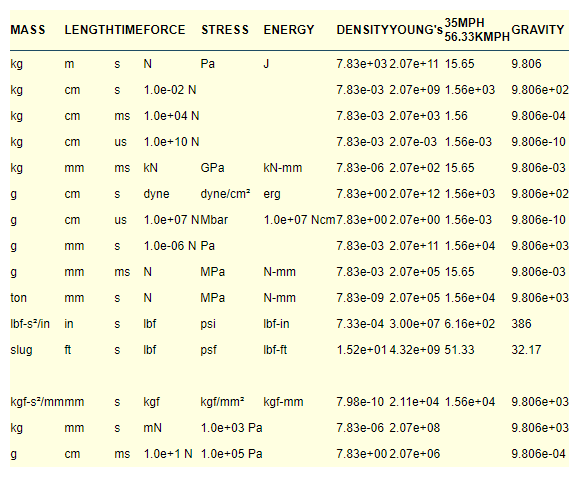
Y:\cal\01\_Comp\09\_NVH\332\_171115\_ESR-033528\_172597\_VW\_AUI\_AU\_426\_SB\_R200\_Allen\05\_ls\_dyna\_test\04\_DYNA\_PRE\_LOAD

*0917*

*注意接触卡片VDC的设置，有助于计算的稳定性。*

*关键：接触穿透是否检查，接触卡片设置是否正确。*

*气袋材料方向，气袋的封闭*



# Works Cited

http://www.datapointlabs.com/testpaks/ls-dyna07/ls-dyna07\_paper.htm. (n.d.).

https://www.dynalook.com/european-conf-2007/methodology-for-selection-of-material-models-for.pdf. (n.d.).

*https://www.dynasupport.com/howtos/contact/soft-option.* (n.d.).

**https://serc.carleton.edu/NAGTWorkshops/mineralogy/mineral\_physics/tensors.html**

**TrubleShooting**

1. **AIRBAG\_PARTICLE 内能出现负值**