6.0 EXAMPLE PROBLEMS

It is recommended that a new user construct a **MAC/GMC** input file using the data given in these Examples and then check to see if the same result plots and/or files are obtained.

6.1 Example A: Pure Mechanical Load

Sample Input File For A Mechanical Load Problem

The following example is used to explain the control blocks in more detail.

Problem Summary:

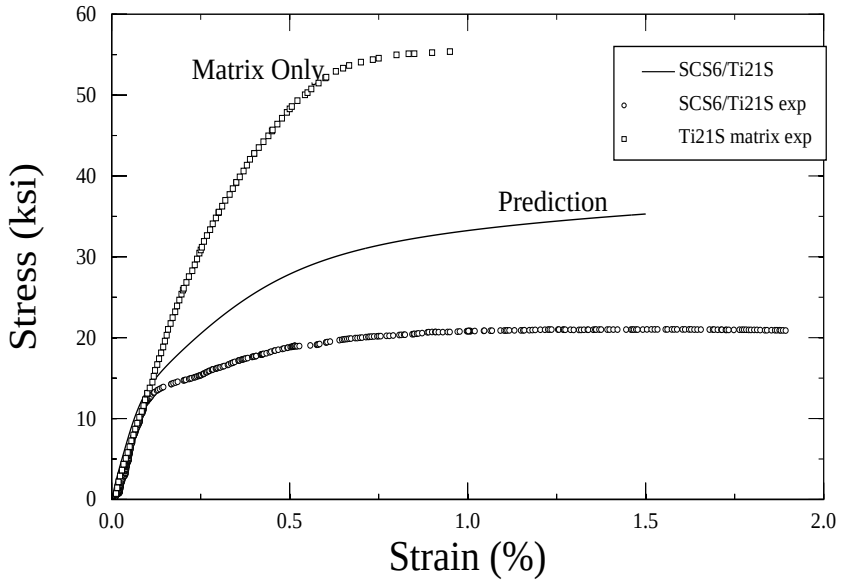
Load Type:	Mechanical
Load Component:	22-direction (transverse to fiber)
Load History:	Monotonic
Load Control:	Strain
Load History Data:	$\dot{\varepsilon} = 8.333x10^{-4}$/sec, $\varepsilon_{max} = 0.015$, $\varepsilon_{min} = 0.$ $\Delta t_{initial} = 0.0000024$ sec
Micromechanics model:	Double Periodicity
Fiber Packing Arrangement:	Hexagonal Pack at 35% fiber volume ratio
Integration Algorithm:	Predictor/Corrector
Constituent Material Model:	GVIPS - isotropic form
Constituents:	Fiber: SCS-6 Matrix: TIMETAL21S Interface: fictitious weak interface for TIMETAL21S

☞ **Note:** This example **will take an extremely long time to run** due to the elastic-perfectly viscoplastic definition of the fictitious weak interface, as the overall time step is limited to that of the allowable interface time step. **This slow computational response is NOT indicative of GMC**.

Mechanical load, no residual, perfectly viscoplastic interface, takes long time

```
*PRINT
  NPL=0 %
*LOAD
  LCON=2 LOP=2 LSS=1 %
*MECH
  NPTW=2 TI=0.,18. LO=0.,0.015 %
*MODEL
  MOD=1 %
*SOLVER
  NTF=2 ISTM=0.0000024 ERR=0.1E-2 %
*FIBER
  NFIBS=1
  NF=1 MF=6 NDPT=1 MAT=D TEMP=650 %
*MATRIX
  NMATX=1
  NM=1 MM=4 NDPT=1 MAT=A TEMP=650 %
*MRVE
  IDP=2 VF=0.35 RAD=0.07 CPER=0.1 %
*INTERFACE
  NINT=1
  NI=1 MI=4 NDPT=1 MAT=U IFM=1  &
  EL=11700.,0.365,1. &
  VI=0.8E-8,0.1,0.1E-5,0.,0.85E-3,0.05,1.,1.,1.,3.3,1.8,1.35,1.,0.01 %
*CURVE
  NP=1 %
*MACRO
  NT=1
  NC=1 X=2 Y=8 NAM=apdxa %
*END
```

The following figure was obtained from the x-y plot data file produced by the present example.



☞ **Note:** Using this fictitious interface model the qualitative feature of a weak bond (reduction below that of the matrix only) is obtained, however an accurate fit of the experimental data is still lacking. For a more accurate prediction of transverse behavior see **Examples C** and **D**.