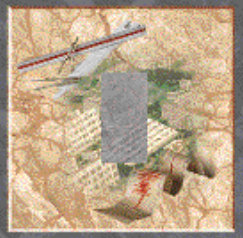
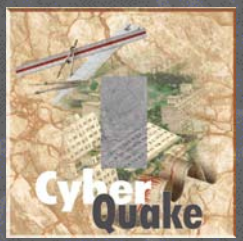


CyberQuake



CyberQuake : a computer-aided design tool for evaluating seismic soil response

Non linear **behaviour of soil deposits *should* be included in analysis of strong motion earthquakes**

Numerical modelling of seismic soil response is *possible* and permits:

⇨***after the seismic event***

✓**better understanding of phenomenon**

✓**access to distribution of motion with depth**

✓**evaluating unrecorded quantities (pore-pressure, irreversible displacement,...)**

⇨***before the seismic event***

✓**better design of structures**

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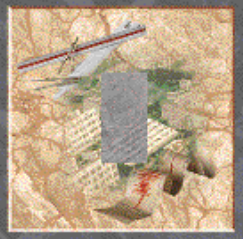
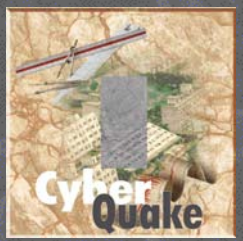


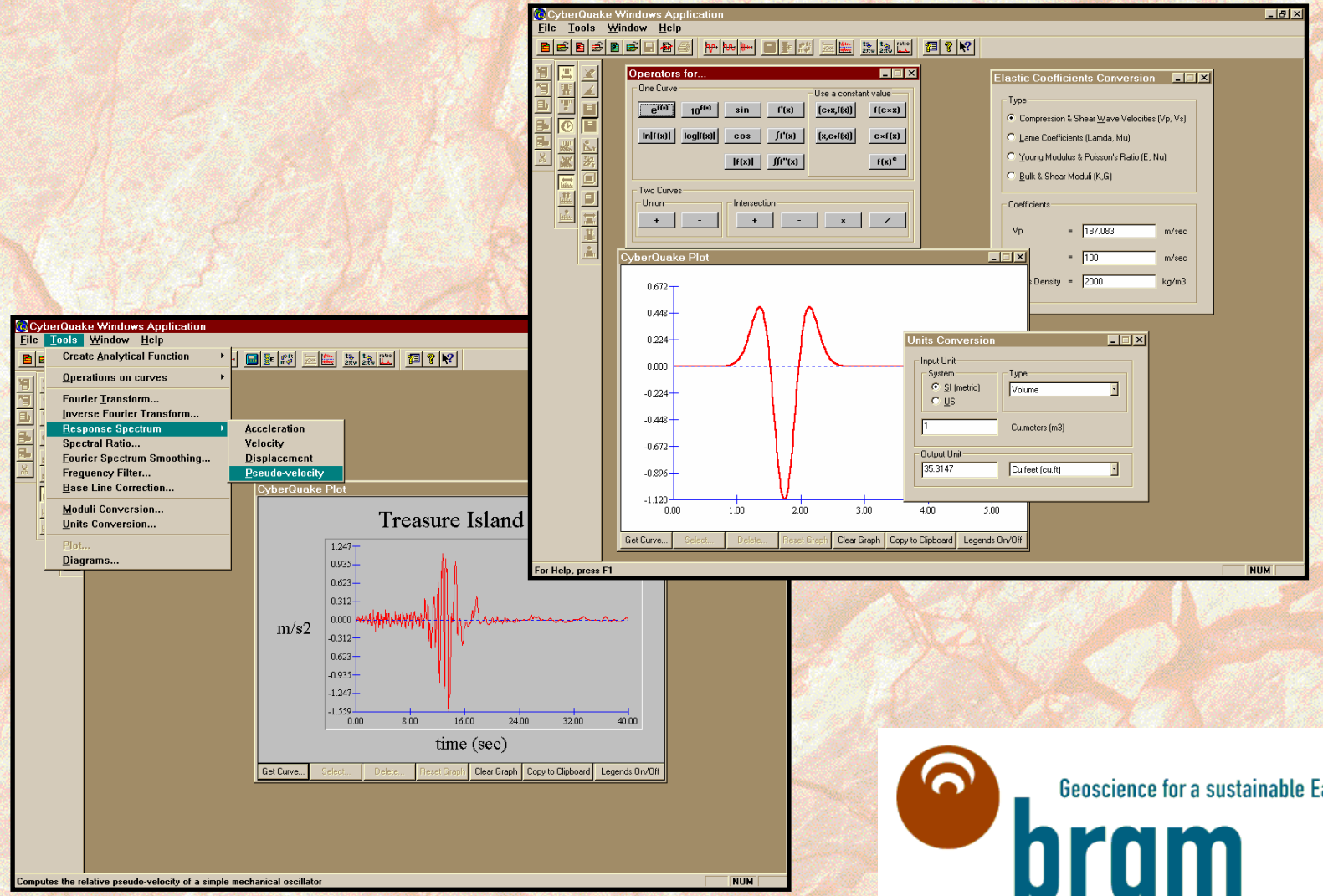
CyberQuake



CyberQuake : A Software for Earthquake Engineers and Researchers

- ✓ Multilayered soil profiles (1D geometry)
- ✓ Drained, totally or partially undrained conditions
- ✓ Rigid or deformable bedrock
- ✓ Two versions (2D or 3D kinematics)
- ✓ Linear elastic, equivalent linear and elastoplastic behaviour assumption
- ✓ Integrated Constitutive model driver
- ✓ Deconvolution of input motion from Control Point
- ✓ External load at the ground surface
- ✓ Extensible accelerogram Data Base
- ✓ Tools for accelerogram treatment
- ✓ Integrated graphics and on-line Help
- ✓ Interactive user-friendly software in Windows' environment (Win95/98,NT)

A complete set of professional tools



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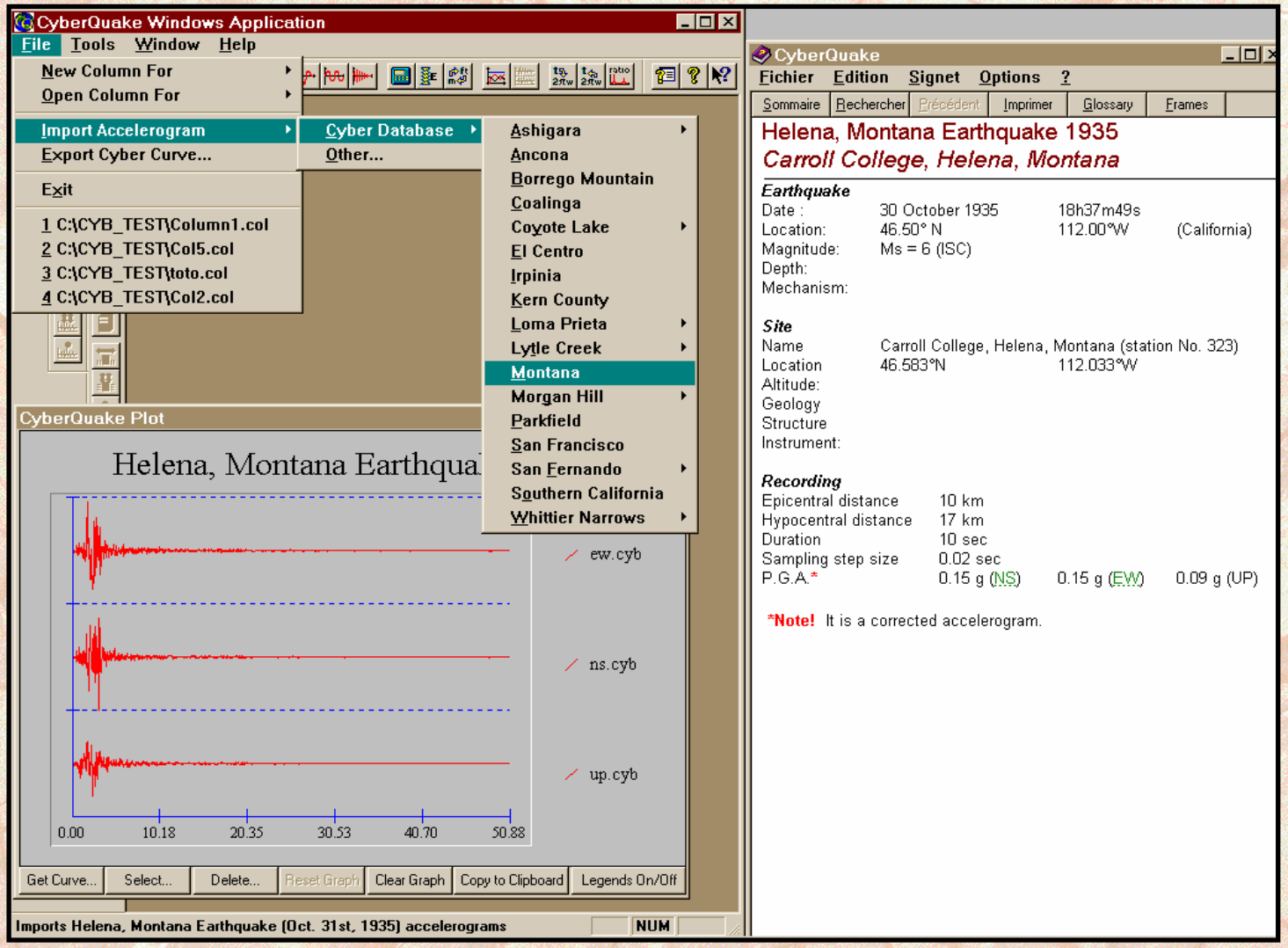
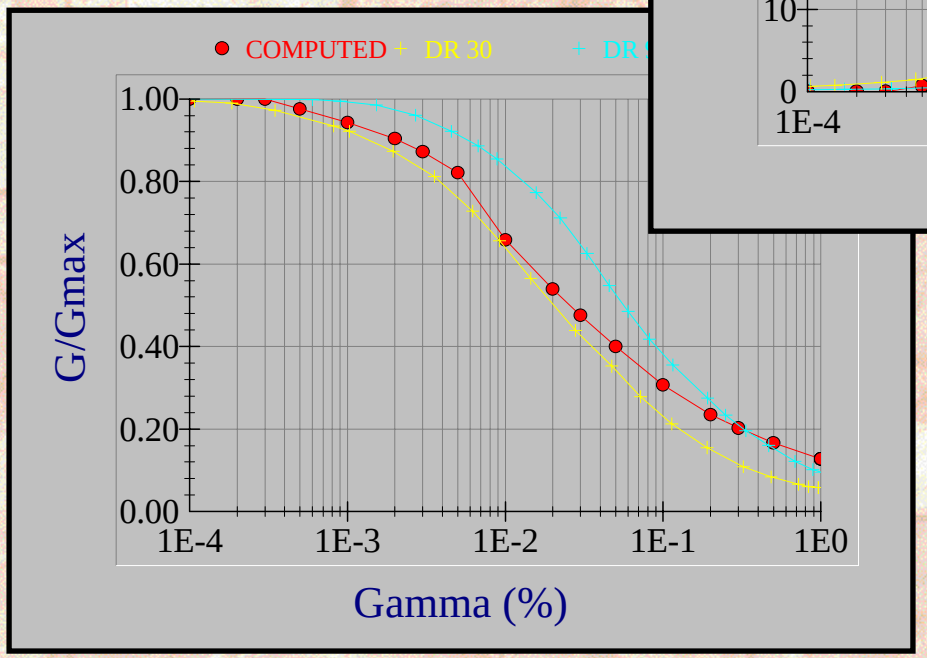
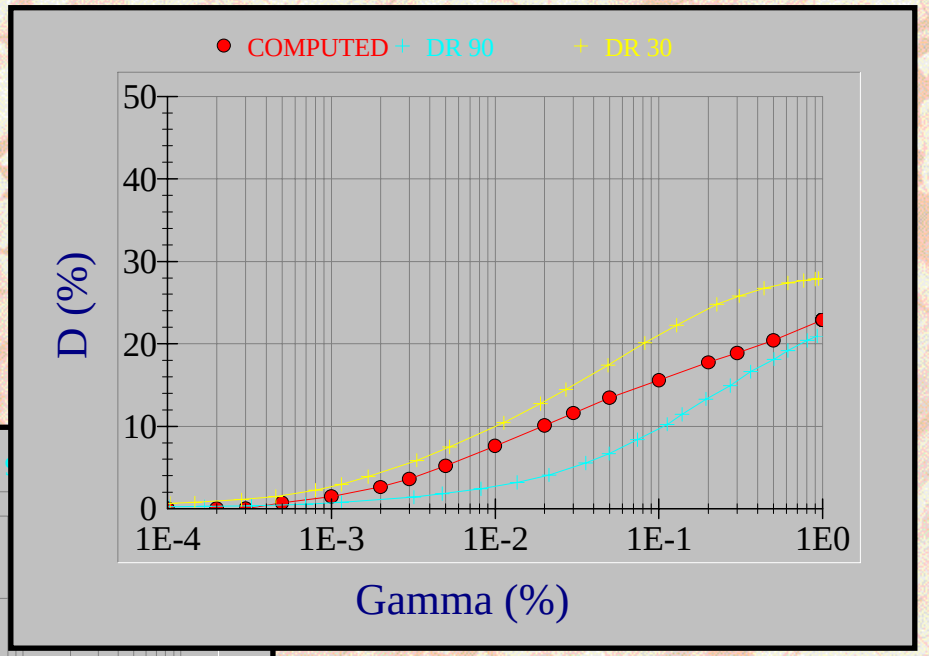
An extensible accelerogram database



Variation of shear secant modulus and damping ratio with cyclic strain





CyberQuake

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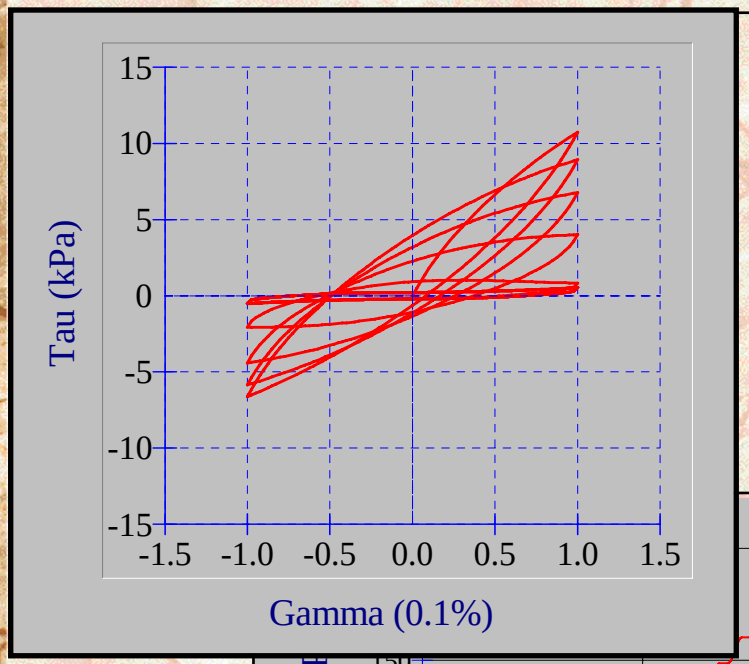
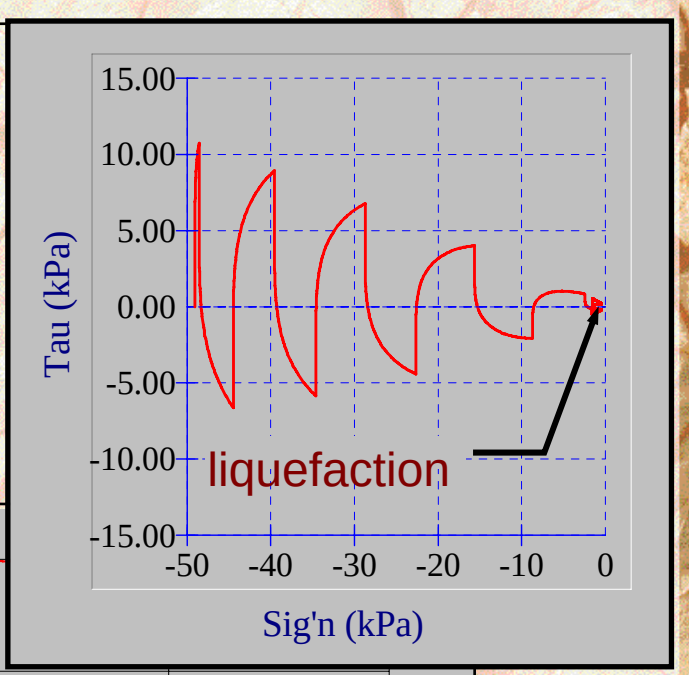
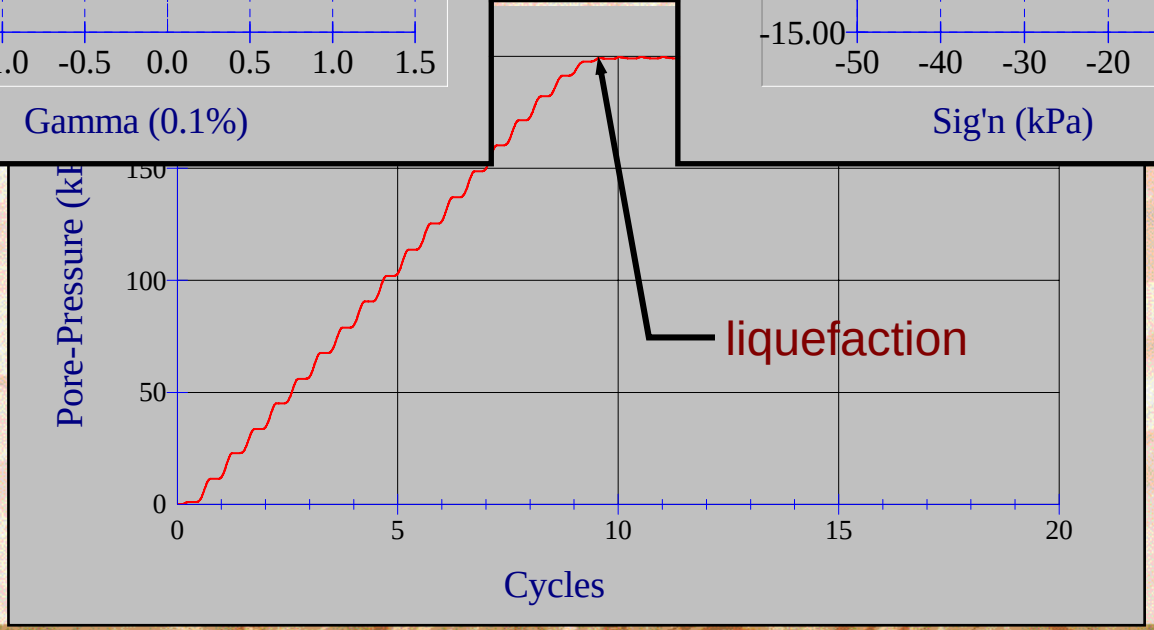
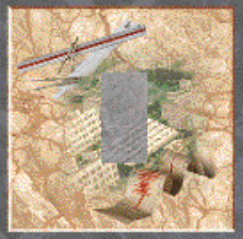
Elastoplastic Constitutive Model

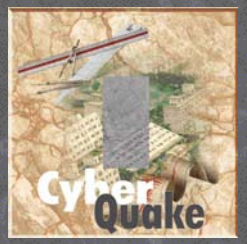




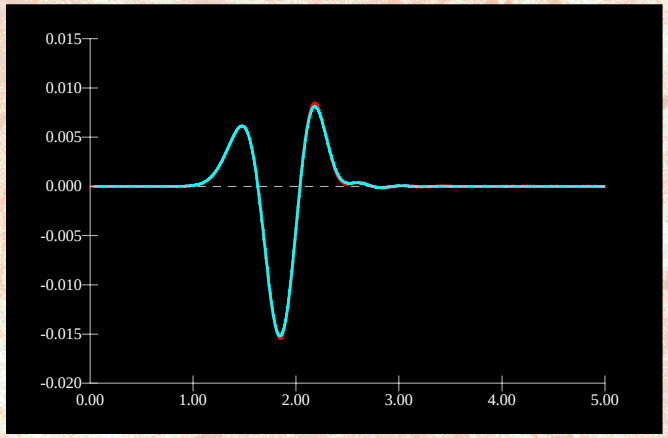


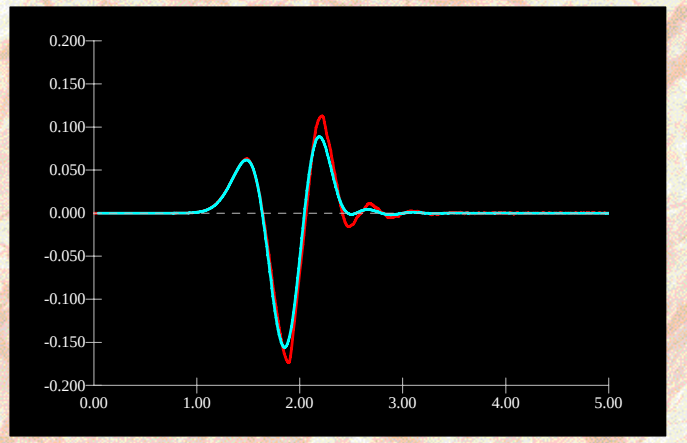


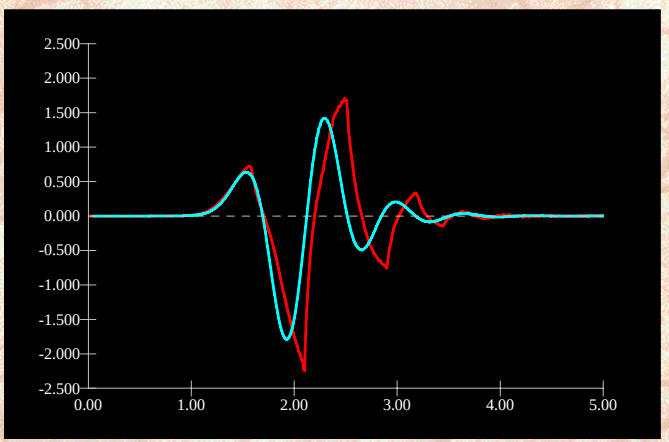
CyberQuake



Equivalent Linear *vs.* Elastoplastic Simulations







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