My Private FLAC3D Repository

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# 2 Using Python with FLAC3D

## 2.1 Geometry, Grid, Zone

The itasca module defines functions and classes for interaction between Python and FLAC3D.

"""  
import itasca as it  
it.command("python-reset-state false")  
"""

The it.command function is used to issue a series of FLAC3D commands.

The it.zone.count function creates 1000 zones

"""  
it.zone.count() # outputs 1000  
"""

The it.zone.find(1) returns a Zone object with id 1. The object is assigned to the Python variable .

"""  
z = it.zone.find(1)  
print z # outputs <itasca.zone.Zone object at 0x00000001B388600, ID : 1>  
z.pos() # outputs vec3(( 5.00000e-01, 5.00000e-01, 5.00000e-01))  
"""

The variable is a Zone object (FLAC3D zone)

pos method of this object returns the zone centroid.

for statement is used to iterate over sequences of things, Loop over all FLAC3D zones.

"""  
volume\_sum = 0.0  
for z in it.zone.list():  
 volume\_sum += z.vol()  
"""

Check that the sum of the zone volumes is what we expect.

"""  
print volume\_sum # outputs 1000.0  
print z.vol() \* it.zone.count()  
assert volume\_sum == z.vol() \* it.zone.count() # outputs 1000.0  
"""

Let’s find a zone near the center of the model

"""  
z = it.zone.near ((5,5,5))  
#confirm position with pos method  
z.pos() # outputs vec3(( 4.500000e+00, 4.500000e+00, 4.500000e+00))  
"""

## 2.2 Group, Range

"""  
  
"""

## 2.3 Constitutive Model

## 2.4 B.C. and I.C.

## 2.5 Step to Equilibrium

## 2.6 Support, Structure, Restore

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# 3 Illustrative Model – Mechanics of FLAC3D

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