



Elastic moduli and fracture parameters of Mt. Epomeo Green Tuff, Ischia island (Southern Italy)

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Ischia is an active volcanic island (last eruption occurred on 1302 A.D), situated in the bay of Naples. The most important structural element of the island is the Mt. Epomeo (787 m a.s.l.), interpreted as a resurgente structure, inside the caldera of Ischia, whose edge are marked by a system of significant faults and fractures. The resurgent structure, formed by the Mt. Epomeo Green Tuff (MEGT), showing a diffuse instability of its flanks, testified by the presence of landslide and debris flow deposits. The high exposure of several town along the Mt. Epomeo flanks, make the island one of the most important area to be monitored.

MEGT is an alkalitachytic ignimbritic deposit, whose age is about 55 ka B.P., filling the caldera of Ischia island. From the textural point of view MEGT is formed by welded and non welded facies, with presence of abundant pumices, xenoliths and biotite and alkali-feldspar crystal. Field studies revealed that MEGT has experienced marked deformative processes, leading to a dome resurgence of about 900 meters, constituting an uplifted block bordered by system of faults and fractures.

In order to model the deformation processes involving MEGT and understand the relationships between stress and strain acting in the area, we measured elastic moduli and fracture parameters of these rocks. Elastic moduli have been measured statically through uniaxial compressional tests and dynamically through the ultrasonic pulse transmission technique. Fracture parameters have been determined on the basis of the maximum compressional strength, obtained through stress-strain curves. Experimental work has been carried out with the facilities installed at the Laboratory of Rock Physics at OV-INGV.