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A 60 m laser strainmeter

BY G. MANZONI AND C. MARCHESINI

Instituto di Geodesia e Geofisica, University of Trieste, Italy

A 60 m Michelson interferometer having a He–Ne frequency stabilized laser source has been installed near Trieste, Italy, to measure the strain in the crust.

In 1968 the Institute of Geodesy and Geophysics, University of Trieste, began the construction of a laser strainmeter for detecting the strain in the crust and in 1969 a 15 m Michelson interferometer was installed in the laboratory of the Institute.

Later on a 60 m interferometer was installed in a tunnel in the Karst near Trieste; the tunnel is almost north–south oriented, is about 150 m above the sea level and 15 to 30 m under the ground level. The site is about 1 km away from the sea.

The system is very similar (Manzoni 1971) to the one described by Bilham & King (1970); the laser is an He–Ne one, frequency stabilized by means of a Zeeman cell; the back reflexion is avoided; the optical path of the interferometer is totally *in vacuo*, the pipe being made in steel with flanges; the whole system has a high frequency cut off at 1 Hz due to the analogue recording device, but the fringe counting device has a high-frequency cutoff at 5 MHz.

The system is at present under test in parallel with an horizontal wire strainmeter constructed and installed near the interferometer by the University of Cambridge.

REFERENCES

- Bilham, B. & King, G. 1970 Paper presented at the XII Assemblée Generale de la Commission Séismologique Européenne, Luxembourg, 1970.
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