



Microtremor investigations at the Santuario della Rocca (Sabbio Chiese, Brescia)

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The Santuario della Rocca, whose construction began in the XI century, is situated on the top of a calcareous hill in the centre of the village of Sabbio Chiese (Provincia of Brescia).

During the November 24, 2004 Garda Lake earthquake ($M=5.2$) the church, situated at 9.5 Km epicentral distance, was severely damaged.

A detailed microtremor survey was conducted in the church and immediately outside the church. In addition with a seismic profile along the hillside we investigated the influence of the topography on the damage level. The 5 stations installed at different elevation on the hillside showed an amplification (in the range of 4-9 Hz) that increases according to the altitude.

The Santuario della Rocca layout has the longitudinal dimension more than two times the lateral dimension: the mean fundamental period (the mean of fundamental periods computed by the stations inside the church) is 2,16 Hz along the minor axes and 3 Hz along the major axes.

Moreover we found that the evaluated fundamental period of the Santuario della Rocca structure was significantly dependent on the positions of the seismic stations inside the church. As confirmed by H/V analysis these results were due to the uneven soil foundation properties, with strong variations in few meters distance. The damage pattern has been found in good correlation with our results.