**SUMMARY**

The subject of this thesis is the shear wave velocity determination in the triaxial apparatus by means of bender elements. The measurement and interpretation methods in time domain or frequency domain are usually used for determination of shear wave velocity. To-date experience indicates that velocities determined by both time domain and frequency domain methods often differ by up to 40%. Taking into account that shear wave velocity is used for evaluation of shear modulus, the uncertainty in its determination is a serious objection to its use. However modern geotechnical analyses require evaluation of the shear modulus corresponding to elastic deformation. Therefore this problem is a topical one.

This thesis aims are: analyses of previous procedures used for determination of shear wave velocity, evaluation of bender elements as a source of seismic waves, suggestion of a better procedure for shear wave velocity determination, demonstration of this procedure on some soil samples.

By experiments with different sample lengths and on the basis of modelling the straight waves and converted wave arrival times modifications of the procedure for shear wave velocity determination were proposed.

The measurements made by a laser interferometer allowed me to identify the time delay between the time of the source electric voltage and the onset of the bending of the transmitting element.