

PERTURBATION THEORY FOR COLLECTIVE
MODES IN THE DYNAMICS OF SIMPLE
AND COMPLEX LIQUIDS

I.M. Mrzglod, V.M. Kuporov

Institute for Condensed Matter Physics,
Nat. Acad. of Sci. of Ukraine
(1, Swentsytskyi Str., Lviv 79011, Ukraine;
e-mail: *slw@ph.icmp.lviv.ua*)

S u m m a r y

The perturbation theory formalism is used to calculate the corrections to the generalized collective modes caused by weak cross correlations between thermal and viscoelastic dynamic processes in simple and complex liquids. The general formulation of this perturbation theory up to the second order of magnitude inclusive is performed. The theory is tested by the example of the simplest dynamic models of liquids, and the obtained results are analyzed as compared with the accurate solutions for these models. It is shown that, under appropriate conditions, the results of perturbation theory allow one to reproduce the known solutions for these models.