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RAYLEIGH-BRILLOUIN SCATTERING IN COMPRESSED H_2 , D_2 AND HD

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Résumé. — On présente le spectre Rayleigh-Brillouin de la lumière diffusée par H_2 , D_2 et HD comprimés pour des densités allant de 1 à 100 amagats. On compare les spectres observés à différents spectres théoriques [1]. En particulier on compare [2] le spectre au spectre calculé à partir de la limite hydrodynamique de la théorie microscopique de Tong et Desai. Leur théorie est fondée sur le formalisme de la fonction mémoire : elle rend compte du couplage entre le flux de chaleur et le tenseur des contraintes dû à la viscosité qui a été oublié par d'autres chercheurs. On discute la signification de ce couplage qui influence la relaxation des états rotationnels.

Abstract. — The Rayleigh-Brillouin spectrum of light scattered from compressed H_2 , D_2 and HD is presented for densities ranging from about 1 to 100 amagats. The observed spectra are compared with various theoretical spectra [1]. In particular the spectrum is compared [2] with the theoretical spectra calculated from the hydrodynamic limit of Tong and Desai's microscopic theory. Their theory is based on the Zwanzig-Mori memory function formalism and accounts for the coupling between heat flux and the viscosity stress tensor which has been overlooked by other workers. The significance of this coupling which influences the relaxation of the rotational states is discussed.

References

- [1] MAY (A. D.) and HARA (E. H.), *Can. J. Phys.*, 1971, **49**, 421.
- [2] MAY (A. D.) and HARA (E. H.), soumis au *Can. J. Phys.*