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Landau spectra of ZnH and neutral Zn in germanium

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Landau Spectra of ZnH and Neutral Zn in Germanium

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Abstract

Far-infrared absorption spectroscopy was carried out on samples of germanium cut from single-crystal ingots doped with zinc. The ingots were grown in a hydrogen atmosphere and hence also contained the axial complex ZnH. Landau studies were made in the Voigt configuration for both the acceptors neutral zinc, Zn^0, and ZnH with **B** oriented along <100> crystallographic directions. Measurements were made in a super-conducting magnet with field strengths up to 6 T for both ZnH and Zn^0 using a modified slow-scan Polytec FTIR spectrometer. The incident radiation was plane polarised either parallel or perpendicular to the field. It was found that the main Landau features for both acceptors are the same as for the group III single-hole acceptor boron. The difference is in the fine-structure of the Landau lines which reflects the different natures of the acceptors boron, Zn^0 and ZnH.

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