

Brillouin Light Scattering Studies of Topological Insulators Bi₂Se₃, Sb₂Te₃, and Bi₂Te₃

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DATE: Thursday, August 7, 2014

TIME: 10:30 AM

PLACE: C3024

ABSTRACT: Brillouin Light Scattering has been used to examine acoustic waves in three different Topological Insulators: Bismuth Selenide Bi₂Se₃, Antimony Telluride Sb₂Te₃, and Bismuth Telluride Bi₂Te₃. Two samples of each material were studied to ensure the accuracy of the results obtained. In general, surface mode, quasi-transverse, and quasi-longitudinal bulk modes were observed in all these materials. Rayleigh surface phonon velocities were obtained for the first time from the corresponding Brillouin peak frequency shifts. Quasi-transverse and quasi-longitudinal bulk mode velocities were also obtained. Elastic constants C_{33} and C_{44} were calculated from the measured bulk-velocities. Both bulk acoustic phonon velocities and elastic constants were compared to those obtained in previous studies. All results obtained have been found to be in good agreement with both experimental and some theoretical available studies.

ALL ARE WELCOME!!!