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New Molybdenum Sound Speed Measurements Near 2 Mbar¹ JEFFREY NGUYEN, RICKY CHAU, NEIL HOLMES, Lawrence Livermore National Laboratory, PAUL ASIMOW, California Institute of Technology, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM, CALIFORNIA INSTITUTE OF TECHNOLOGY TEAM — Previous sound speed measurements of molybdenum at high pressures suggested a bcc→hcp and a solid→liquid phase transition at 210 GPa and at 390 GPa, respectively [1]. These results played an important role in shaping the high pressure - high temperature phase diagram of molybdenum. Here we report recent measurements of the sound velocity of molybdenum under shock loading pressures between 190 and 240 GPa. We used a standard "overtake" method [2] and symmetric impacts. Our results, within the uncertainty of the measuring technique, do not support a previous interpretation of a solid-solid phase transition at 210 GPa. However, there is consistent agreement in sound speed at other pressures. We will also describe our analysis technique and interpretation of the new data.

[1] R.S. Hixson, D.A. Boness, J.W. Shaner, and J.A. Moriarty, Phys. Rev. Lett. 62, 637 (1989)

[2] R. G. McQueen, J.W. Hopson, and J.N. Fritz, Rev. Sci. Instrum. 53, 245 (1982)

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