Abstract Submitted
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**Collision-Induced Infrared Absorption by Hydrogen-Helium gas mixtures at Thousands of Kelvin**[1] MARTIN ABEL, LOTHAR FROMMHOLD, The University of Texas at Austin, XIAOPING LI, KATHARINE L.C. HUNT, Michigan State University — The interaction-induced absorption by collisional pairs of $H_2$ molecules is an important opacity source in the atmospheres of the outer planets and cool stars [1]. The emission spectra of cool white dwarf stars differ significantly in the infrared from the expected blackbody spectra of their cores, which is largely due to absorption by collisional $H_2$–$H_2$, $H_2$–He, and $H_2$–H complexes in the stellar atmospheres. Using quantum-chemical methods we compute the atmospheric absorption from hundreds to thousands of kelvin [2]. Laboratory measurements of interaction-induced absorption spectra by $H_2$ pairs exist only at room temperature and below. We show that our results reproduce these measurements closely [2], so that our computational data permit reliable modeling of stellar atmosphere opacities even for the higher temperatures [2]. [1] L. Frommhold, Collision-Induced Absorption in Gases, Cambridge University Press, Cambridge, New York, 1993 and 2006 [2] Xiaoping Li, Katharine L. C. Hunt, Fei Wang, Martin Abel, and Lothar Frommhold, "Collision-Induced Infrared Absorption by Molecular Hydrogen Pairs at Thousands of Kelvin", International Journal of Spectroscopy, vol. 2010, Article ID 371201, 11 pages, 2010. doi: 10.1155/2010/371201

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