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**Infrared study of the electronic structure of metallic pyrochlore iridate $Bi_2Ir_2O_7$** YUNSANG LEE, Soongsil University, S.J. MOON, Hanyang University, SCOTT C. RIGGS, M.C. SHAPIRO, I.R. FISHER, Stanford University, A.F. KEMPER, Lawrence Berkeley National Laboratory, D.N. BASOV, University of California at San Diego — We investigated the electronic properties of a single crystal of metallic pyrochlore iridate $Bi_2Ir_2O_7$ by using the infrared spectroscopy. Our optical conductivity data show the splitting of $t_{2g}$ bands into $J_{eff}$ ones due to strong spin-orbit coupling. We observed a sizable mid-infrared absorption near 0.2 eV within the $J_{eff,1/2}$ bands, which indicates that this material may belong to a class of correlated system. Our findings suggest that the electronic structure of $Bi_2Ir_2O_7$ is governed by the strong spin-orbit coupling and the correlation effect, which is prerequisite for theoretically proposed non-trivial topological phases in pyrochlore iridates. We also discuss possible existence of the very far-infrared region of suppression in the optical conductivity of the compound.

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