Theory of ac Josephson effects in multiple tunneling junctions: A probe of $\pm s$-wave in iron-based superconductors YUKIHIRO OTA[1], NORIYUKI NAKAI[2], HIROKI NAKAMURA[3], MASAHIKO MACHIDA[4], CCSE, JAEA, DAISUKE INOTANI, YOJI OHASHI[5], Dept. of Physics, Keio Univ., TOMIO KOYAMA[6], HIDEKI MATSUMOTO[7], IMR, Tohoku Univ. — An enormous amount of studies has been devoted to the identification of the pairing symmetry in iron-based superconductors. We show a theory of Josephson junctions with multi-gap superconductors. We focus on a heterotic (multi-band)superconductor-insulator-(one-band)superconductor junction. We derive the Ambegaokar-Baratoff relation. We evaluate a lower bound of $J_\mathrm{c}R_\mathrm{n}$ for s-wave without sign change, which may correspond to a upper bound for $\pm s$-wave. Next, we discuss how a fluctuation of relative phases between the gaps and the symmetry modify the Shapiro step. Thus, we propose a direct method to identify $\pm s$-wave.

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