Contact Tensor in a p-Wave Fermi Gas with Anisotropic Feshbach Resonances SHUHEI M. YOSHIDA, University of Tokyo, MASAHITO UEDA, University of Tokyo, RIKEN CEMS — Recent theoretical and experimental investigations have revealed that a Fermi gas with a p-wave Feshbach resonance has universal relations between the system's high-momentum behavior and thermodynamics. A new feature introduced by the p-wave interaction is anisotropy in the Feshbach resonances; three degenerate p-wave resonances split according to the magnetic quantum number of the closed-channel molecules $|m|$ due to the magnetic dipole-dipole interaction. Here, we investigate the consequences of the anisotropy. We show that the momentum distribution has a high-momentum asymptote $n_k \sim k^{-2} \sum_{m,m'=-1}^{1} C_{m,m'} Y_1^{m*}(\hat{k}) Y_1^{m'}(\hat{k})$, in which we introduce the p-wave contact tensor $C_{m,m'}$. In contrast to the previous studies, it has nine components [1,2]. We identify them as the number, angular momentum, and nematicity of the closed-channel molecules. We also discuss two examples, the anisotropic p-wave superfluid and a gas confined in a cigar-shaped trap, which exhibit a nematicity component in the p-wave contact tensor. [1] S. M. Yoshida, and M. Ueda, Phys. Rev. Lett. **115**, 135303 (2015). [2] Z. Yu, J. H. Thywissen, and S. Zhang, Phys. Rev. Lett. **115**, 135304 (2015).

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