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**Pseudogap phenomena in the BCS-BEC crossover regime of atomic Fermi gases** SHUNJI TSUCHIYA, Department of Physics, Keio University, 3-14-1 Hiyoshi, Yokohama, Japan and CREST(JST), 4-1-8 Honcho, Saitama, Japan, RYOTA WATANABE, Department of Physics, Keio University, 3-14-1 Hiyoshi, Yokohama, Japan , YOJI OHASHI, Department of Physics, Keio University, 3-14-1 Hiyoshi, Yokohama, Japan and CREST(JST), 4-1-8 Honcho, Saitama, Japan — We study pseudogap behavior of atomic Fermi gases in the BCS-BEC crossover. Including pairing fluctuations, we calculate the fermionic density of states above the superfluid transition temperature  $T_c$ , based on the strong coupling theory developed by Nozieres and Schmitt-Rink. We show that the gap structure appears in the density of states above  $T_c$  in the crossover region, and it evolves as the attractive interaction strength increases. We also clarify the temperature dependence of the pseudogap, which disappears as the temperature rises, and determine the pseudogap region in the phase diagram. We discuss the origin of the pseudogap by examining the behaviors of quantities such as spectral function and self-energy.

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