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Coexistence of superconductivity and antiferromagnetism in multilayered high- T_c cuprates MICHİYASU MORI, SADAMICHI MAEKAWA, IMR, Tohoku University — We propose a mechanism for high critical temperature (T_c) in the coexistent phase of superconducting- (SC) and antiferromagnetic (AF) CuO_2 planes in multilayered cuprates. The Josephson coupling between the SC planes separated by an AF insulator (Mott insulator) is calculated perturbatively up to the fourth order in terms of the hopping integral between adjacent CuO_2 planes. The perturbative processes comprises two parts: The first provides a positive value of Josephson coupling called *0-Josephson coupling*, while the second makes a negative contribution called *π -Josephson coupling*. We find that the AF exchange interaction suppresses the latter process, and allows the Cooper pair to tunnel through the Mott insulator. The fluctuations of the SC phase are suppressed by this long-ranged Josephson coupling, and it is this which enables the coexistence and a rather high value of T_c .

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