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Anderson localization (Anderson 1958) has been an important and difficult problem in solid state physics (Anderson 1978, Mott 1966, 1974, 1975, 1978). However there has been great development in the understanding of the phenomenon after the recent works by Abrahams et al. (1979) and Anderson et al. (1979). They elaborated scaling theories which had been discussed before (Thouless (1974), Licciardello and Thouless (1975), Wegner (1976)), and obtained remarkable results
for each dimension, d; (1) absence of the minimum metallic conductivity in d=3 and 
(2) absence of metallic ground state in d=2. This new scaling theory has not only 
concluded these unexpected findings but also developed a systematic way to treat 
localization microscopically through the definite identification of the expansion 
parameter by which effects of localization can be examined perturbatively from the 
metallic limit. The regime where such perturbative treatment is valid is now called 
the weakly localized regime (WLR). This is the regime where one can see the 
precursor to the complete localization and where various scattering mechanisms are 
seen to play distinct roles. Especially the importance of the mutual interactions 
has become clear. The validity of perturbation theory in this regime makes 
quantitative comparison possible between theory and experiment and the detailed 
knowledge of WLR obtained through the analysis will be essential to the better and 
complete understanding of the localization phenomenon.

In this paper interaction effects in WLR are reviewed for two- and three-
dimensions. In order to maintain self-containedness results for non-interacting 
cases are also summarized.

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