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Zhivko S. Athanassov* (zhivko@math.bas.bg), Institute of Mathematics, Bulgarian Academy of Sciences, G. Bonchev Str. 8, 1113 Sofia, Bulgaria. *Perron-Type Existence Theorems for First Order Initial Value Problems*. Preliminary report.

Upper (major) and lower (minor) functions were first introduced by de La Vallée Poussin in 1916 in his study of Lebesgue integral. Evidently equivalent notions were introduced independently by Perron in 1914 who used them to define a new integral. In his famous paper of 1915, Perron proved by the use of upper and lower functions the existence of a solution of the initial value problem for the differential equation $dx/dt = f(t, x)$. Our theorems generalize and extend Perron's theorem. Perron's requirement that f be continuous on a specified compact subset on the plane is significantly modified. (Received September 11, 2017)