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Professor Marc QUINCAMPOIX

Value Function of Differential Games without Isaacs Conditions

Abstract: We investigate the problem of the existence of a value for differential games without Isaacs condition. For this we introduce a suitable concept of mixed strategies along a partition of the time interval, which are associated with classical non anticipative strategies (with delay). Imposing on the underlying controls for both players a conditional independence property, we obtain the existence of the value in mixed strategies as the limit of the lower as well as of the upper value functions along a sequence of partitions which mesh tends to zero. Moreover, we characterize this value in mixed strategies as the unique viscosity solution of the corresponding Hamilton-Jacobi-Isaacs equation.