

# Expected Residual Minimization Method for Stochastic Linear Complementarity Problems

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**Abstract.** This paper presents a new formulation for the stochastic linear complementarity problem (SLCP), which aims at minimizing an expected residual defined by an NCP function. We generate observations by the quasi-Monte Carlo methods and prove that every accumulation point of minimizers of discrete approximation problems is a minimum expected residual solution of the SLCP. We show that a sufficient condition for the existence of a solution to the expected residual minimization (ERM) problem and its discrete approximations is that there is an observation  $\omega^i$  such that the coefficient matrix  $M(\omega^i)$  is an  $R_0$  matrix. Furthermore, we show that, for a class of problems with fixed coefficient matrices, the ERM problem becomes continuously differentiable and can be solved without using discrete approximation. Preliminary numerical results on a refinery production problem indicate that a solution of the new formulation is desirable.

*This is a joint work with Xiaojun Chen (Hirosaki University).*