A Stochastic Competitive R&D Race Where
``Winner Takes All: Explicit Computation of a
Unique Nash Equilibrium

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Abstract

The paper considers an environment in which multiple firms compete over the development of a product. The first firm to complete the project gains a reward whereas the other firms gain nothing. The decisions of the firms are the level of investment in the project and these decisions affect the random (exponential) completion time. The paper provides a method for explicitly computing a unique Nash equilibrium, parametrically in the interest rate. The structure of the solution yields some insights about the behavior of the participants. Further, under additional assumptions, an explicit expression for a unique globally optimal solution is obtained and it is compared with the unique Nash equilibrium.

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