Functional Limits for TSRRPs and SDEs with Skew Reflections

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Abstract: We prove a functional central limit theorem for triply stochastic renewal reward processes (TSRRPs). Based on the theorem, we can identify the functional limits for stochastic queueing networks driven by TSRRPs and under a non-zero-sum game-based Pareto-optimal control law. The limits are special forms of our newly established and unified system of SDEs with doubly completely-$\mathcal{S}$ skew reflections. Applications of our limits in intelligent cloud-computing systems with multiple pools for big-data services will also be briefly mentioned.

References

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