

List of Publications

Wasiur R. KhudaBukhsh

1 Preprints/Submitted

- [1] J. D. Harborne, Wasiur R. KhudaBukhsh, and John R. King. Deterministic and stochastic asymptotics for a multiscale epidemic model. 2026. Submitted.
- [2] Yordan P. Raykov, Hengrui Luo, Justin D. Strait, and Wasiur R. KhudaBukhsh. Kernel-based estimators for functional causal effects. 2026. Under review.
- [3] Wasiur R. KhudaBukhsh and Yangrui Xiang. Mixing time for a noisy SIS model on graphs. 2026. Submitted.
- [4] Karim S. Elsayed, Olga Izyumtseva, Wasiur R. KhudaBukhsh, and Amr Rizk. Stochastic analysis of entanglement-assisted quantum communication channels. 2025. Revision requested.
- [5] Olga Izyumtseva and Wasiur R. KhudaBukhsh. Local times of self-intersection and sample path properties of Volterra Gaussian processes. 2025. Revision requested.
- [6] Arnab Ganguly and Wasiur R. KhudaBukhsh. Enzyme kinetic reactions as interacting particle systems: Stochastic averaging and parameter inference. 2026. Revision requested.

2 Peer-reviewed journal publications

- [7] Arnab Ganguly and Wasiur R. KhudaBukhsh. Asymptotic analysis of the total quasi-steady state approximation for the Michaelis–Menten enzyme kinetic reactions. *Journal of Mathematical Analysis and Applications*, 2026. In press.
- [8] Yi Fu, Hye-Won Kang, Wasiur R. KhudaBukhsh, Lea Popovic, Grzegorz A. Rempała, and Ruth J. Williams. Fragility in a Togashi-Kaneko stochastic model with mutations. *SIAM Journal on Life Sciences*, 2026. In press.
- [9] Riccardo Corradin, Luca Danese, Wasiur R. KhudaBukhsh, and Andrea Ongaro. Model-based clustering of time-dependent observations with common structural changes. *Statistics and Computing*, 36(7), 2026.

- [10] Alexander E. Zarebski, Nefel Tellioglu, Jessica E. Stockdale, Julie A. Spencer, Wasiur R. KhudaBukhsh, Joel C. Miller, and Cameron Zachreson. Including frameworks of public health ethics in computational modelling of infectious disease interventions. *Interface Focus*, 15, 2025.
- [11] Yushuf Sharker, Zaynab Diallo, Wasiur R. KhudaBukhsh, and Eben Kenah. Pairwise accelerated failure time regression models for infectious disease transmission in close contact groups with external sources of infection. *Statistics in Medicine*, 2024.
- [12] Wasiur R. KhudaBukhsh and Grzegorz A. Rempała. How to *correctly* fit an SIR model to data from an SEIR model? *Mathematical Biosciences*, 2024.
- [13] Matthew Wascher, Patrick Schnell, Wasiur R. KhudaBukhsh, Mikkel B.M. Quam, Joseph Tien, and Grzegorz Rempała. Estimating disease transmission in a closed population under repeated testing. *Journal of the Royal Statistical Society: Series C (JRSSC)*, 2024.
- [14] István Z. Kiss, Luc Berthouze, and Wasiur R. KhudaBukhsh. Towards inferring network properties from epidemic data. *Bulletin of Mathematical Biology*, 2024.
- [15] Wasiur R. KhudaBukhsh, Sat Kartar Khalsa, Eben Kenah, Grzegorz Rempała, and Joseph Tien. COVID-19 dynamics in an Ohio prison. *Frontiers in Public Health*, 2023.
- [16] Wasiur R. KhudaBukhsh, Caleb Deen Bastian, Matthew Wascher, Colin Klaus, Saumya Yashmohini Sahai, Mark H. Weir, Eben Kenah, Elisabeth Root, Joseph H. Tien, and Grzegorz A. Rempała. Projecting COVID-19 cases and hospital burden in ohio. *Journal of Theoretical Biology*, 561:111404, 2023.
- [17] Colin Klaus, Matthew Wascher, Wasiur R. KhudaBukhsh, and Grzegorz Rempała. Likelihood-Free Dynamical Survival Analysis applied to the COVID-19 epidemic in Ohio. *Mathematical Biosciences and Engineering*, 20, 2023.
- [18] Kai Cui, Wasiur R. KhudaBukhsh, and Heinz Koepll. Hypergraphon mean-field games. *Chaos*, 2022.
- [19] Wasiur R. KhudaBukhsh, Casper Woroszylo, Grzegorz Rempała, and Heinz Koepll. A functional central limit theorem for SI processes on configuration model graphs. *Advances in Applied Probability*, 2022.
- [20] Colin Klaus, Matthew Wascher, Wasiur R. KhudaBukhsh, Joseph H. Tien, Grzegorz A. Rempała, and Eben Kenah. Assortative mixing among vaccination groups and biased estimation of reproduction numbers. *The Lancet Infectious Diseases*, 22:P579–581, 5 2022.

- [21] Francesco Di Lauro*, Wasiur R. KhudaBukhsh*, István Z. Kiss, Eben Kenah, Max Jensen, and Grzegorz Rempała. Dynamic survival analysis for non-markovian epidemic models. *Journal of the Royal Society Interface*, 2022. *Both authors contributed equally and are joint first authors.
- [22] Kai Cui, Wasiur R. KhudaBukhsh, and Heinz Koepll. Motif-based mean-field approximation of interacting particles on clustered networks. *Physical Review E*, 105, 4 2022.
- [23] Harley Vossler, Pierre Akilimali, Yuhua Pan, Wasiur R. KhudaBukhsh, Eben Kenah, and Grzegorz A. Rempała. Analysis of individual-level epidemic data: Study of 2018-2020 ebola outbreak in democratic republic of the congo. *Scientific Reports*, 12, 2022.
- [24] Ido Somekh*, Wasiur R. KhudaBukhsh*, Elisabeth Dowling Root*, Greg Rempala, Eric Simoes, and Eli Somekh. Quantifying the Population-level Effect of COVID-19 Mass Vaccination Campaign in Israel: A Modeling Study. *Open Forum Infectious Diseases*, 2022. *Equal contribution.
- [25] Wasiur R. KhudaBukhsh*, Hye-Won Kang, Eben Kenah, and Grzegorz Rempała. Incorporating age and delay into models for biophysical systems. *Physical Biology*, 18(1), 2021. (*Invited paper).
- [26] Wasiur R. KhudaBukhsh, Boseung Choi, Eben Kenah, and Grzegorz Rempała. Survival dynamical systems: individual-level survival analysis from population-level epidemic models. *Journal of the Royal Society Interface Focus*, 10(1), 2020.
- [27] Wasiur R. KhudaBukhsh, Arnab Audy, Yann Disser, and Heinz Koepll. Approximate lumpability for Markovian agent-based models using local symmetries. *Journal of Applied Probability*, 56, 9 2019.
- [28] Hye-Won Kang*, Wasiur R. KhudaBukhsh*, Heinz Koepll, and Grzegorz Rempała. Quasi-steady-state approximations derived from a stochastic enzyme kinetics. *Bulletin of Mathematical Biology*, 81(5):1303–1336, 2019. *joint first authors.
- [29] Saumya Yashmohini Sahai, Saket Gurukar, Wasiur R. KhudaBukhsh, Srinivasan Parthasarathy, and Grzegorz A. Rempała. A Machine Learning Model for Nowcasting Epidemic Incidence. *Mathematical Biosciences*, 2021.
- [30] Wasiur R. KhudaBukhsh, Sounak Kar, Bastian Alt, Amr Rizk, and Heinz Koepll. Generalized cost-based job scheduling in very large cluster systems. *IEEE Transactions on Parallel and Distributed Systems*, 31(11):2594–2604, 2020.
- [31] Boseung Choi, Sydney Busch, Dieudonné Kazadi, Benoit Ilunga, Emile Okitolonda, Yi Dai, Robert Lumpkin, Omar Saucedo, Wasiur R. KhudaBukhsh, Joseph Tien, Marcel Yotebieng, Eben Kenah, and Grzegorz A. Rempała. Modeling Outbreak Data: Analysis of a 2012 Ebola Virus Disease Epidemic in DRC. *BIOMATH*, 8(2), 2019.

- [32] Wasiur R. KhudaBukhsh, Amr Rizk, Sounak Kar, and Heinz Koepll. Provisioning and performance evaluation of parallel systems with output synchronization. *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS)*, 4(1), 3 2019.
- [33] Bastian Alt, Markus Weckesser, Christian Becker, Matthias Hollick, Sounak Kar, Anja Klein, Robin Klose, Roland Kluge, Heinz Koepll, Boris Koldehofe, Wasiur R. KhudaBukhsh, Mahdi Mousavi, Martin Pfannmueller, Amr Rizk, Andy Schuerr, and Ralf Steinmetz. Transitions: A protocol-independent view of the future internet. *Proceedings of the IEEE*, 107(4):835–846, 4 2019.

3 Book chapters

- [34] Olga Izyumtseva, Wasiur R. KhudaBukhsh, and Grzegorz A. Rempała. Functional law of large numbers for an epidemic model with random effects. *Handbook of Statistics*. Elsevier, 2024.
- [35] Grzegorz A. Rempała and Wasiur R. KhudaBukhsh. Dynamical survival analysis for epidemic modeling. In *Handbook of Visual, Experimental and Computational Mathematics*, pages 1–17. Springer International Publishing, 2023.

4 Peer-reviewed conference proceedings

- [36] Karim Elsayed, Wasiur R. KhudaBukhsh, and Amr Rizk. On the Trade-off between Fidelity and Latency for the Quantum Link Layer with few Memories and Entanglement Purification. In *Proceedings of the International Conference on Quantum Communications, Networking, and Computing (QCNC 2024)*, 2024. Best paper award.
- [37] Karim Elsayed, Wasiur R. KhudaBukhsh, and Amr Rizk. On the Fidelity Distribution of Link-level Entanglements under Purification. In *Proceedings of the IEEE International Conference on Communication (ICC) 2024*, 2024.
- [38] Riccardo Corradin, Luca Danese, Wasiur KhudaBukhsh, and Andrea Ongaro. Model-based clustering of non-stationary time series with common historical change times. In *Statistical Learning, Sustainability and Impact*, 2023.
- [39] Wasiur R. KhudaBukhsh, Bastian Alt, Sounak Kar, Amr Rizk, and Heinz Koepll. Collaborative uploading in heterogeneous networks: Optimal and adaptive strategies. In *IEEE International Conference on Computer Communications (INFO-COM)*, 4 2018. < 20% acceptance rate. Best-in-Session Presentation Award.
- [40] Wasiur R. KhudaBukhsh, Amr Rizk, Alexander Frömmgen, and Heinz Koepll. Optimizing Stochastic Scheduling in Fork-Join Queueing Models: Bounds and Ap-

plications. In *IEEE International Conference on Computer Communications (INFOCOM)*, 5 2017. $\sim 20\%$ per cent acceptance rate.

- [41] Adrian Šošić, Wasiur R. KhudaBukhsh, A. M. Zourbir, and Heinz Koepll. Inverse reinforcement learning in swarm systems. In *AAMAS Workshop on Transfer in Reinforcement Learning*, May 2017. Available: <http://www.tirl.info/proceedings/2017/SosicEtal-Inverse.pdf>.
- [42] Adrian Šošić, Wasiur R. KhudaBukhsh, A. M. Zourbir, and Heinz Koepll. Inverse reinforcement learning in swarm systems. In *International Conference on Autonomous Agents & Multiagent Systems (AAMAS)*, 5 2017. $\sim 26\%$ per cent acceptance rate, Best Paper Award Finalist.
- [43] Wasiur R. KhudaBukhsh, Julius Rückert, Julian Wulfheide, David Hausheer, and Heinz Koepll. Analysing and Leveraging Client Heterogeneity in Swarming-based Live Streaming. In *IFIP Networking Conference (IFIP Networking) and Workshops*, 5 2016. $\sim 26\%$ per cent acceptance rate.
- [44] Mahdi Mousavi, Hussein Al Shatri, Wasiur R. KhudaBukhsh, Heinz Koepll, and Anja Klein. Cross-Layer QoE-based Incentive Mechanism for Video Streaming in Multi-Hop Wireless Networks. In *IEEE 86th Vehicular Technology Conference (VTC)*, 9 2017.

5 Thesis and technical notes

- [45] Wasiur R. KhudaBukhsh. *Model reductions for queueing and agent-based systems with applications in communication networks*. PhD thesis, Technische Universität, Darmstadt, 2018. Available at: <http://tuprints.ulb.tu-darmstadt.de/7588/>.
- [46] Mark Sinzger-D'Angelo, Heinz Koepll, and Wasiur R. KhudaBukhsh. Bounds on the spectral radius of real-valued non-negative kernels on measurable spaces. 2023. Preprint: <https://arxiv.org/abs/1808.00258>.