List of Publications

Wasiur R. KhudaBukhsh

1 Preprints/Submitted

[1] 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, 2026. Submitted.

[2] J. D. Harborne, **Wasiur R. KhudaBukhsh**, and John R. King. Deterministic and stochastic asymptotics for a multiscale epidemic model, 2026. Submitted.

[3] Arnab Ganguly and **Wasiur R. KhudaBukhsh**. Asymptotic analysis of the total quasi-steady state approximation for the Michaelis–Menten enzyme kinetic reactions, 2025. Submitted.

[4] Yordan P. Raykov, Hengrui Luo, Justin D. Strait, and **Wasiur R. KhudaBukhsh**. Kernel-based estimators for functional causal effects, 2026. Submitted.

[5] **Wasiur R. KhudaBukhsh** and Yangrui Xiang. Mixing time for a noisy SIS model on graphs, 2026. Submitted.

[6] Karim S. Elsayed, Olga Izyumtseva, **Wasiur R. KhudaBukhsh**, and Amr Rizk. Stochastic analysis of entanglement-assisted quantum communication channels, 2025. Submitted.

[7] Olga Izyumtseva and **Wasiur R. KhudaBukhsh**. Local times of self-intersection and sample path properties of Volterra Gaussian processes, 2025. Submitted.

[8] Arnab Ganguly and **Wasiur R. KhudaBukhsh**. Enzyme kinetic reactions as interacting particle systems: Stochastic averaging and parameter inference, 2026. Submitted.

2 Peer-reviewed journal publications

[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 Koeppl. Hypergraphon mean-field games. *Chaos*, 2022.

[19] **Wasiur R. KhudaBukhsh**, Casper Woroszylo, Grzegorz Rempała, and Heinz Koeppl. 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 Koeppl. Motif-based mean-field approximation of interacting particles on clustered networks. *Physical Review E*, 105, 4 2022.

[23] Harley Vossler, Pierre Akilimali, Yuhan 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 Auddy, Yann Disser, and Heinz Koeppl. 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 Koeppl, 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 Koeppl. 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 Koeppl. 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 Koeppl, Boris Koldehofe, **Wasiur R. KhudaBukhsh**, Mahdi Mousavi, Martin Pfannemueller, 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 Koeppl. Collaborative uploading in heterogeneous networks: Optimal and adaptive strategies. In *IEEE International Conference on Computer Communications (INFOCOM)*, 4 2018. $< 20\%$ acceptance rate. Best-in-Session Presentation Award.

[40] **Wasiur R. KhudaBukhsh**, Amr Rizk, Alexander Frömmgen, and Heinz Koeppl. Optimizing Stochastic Scheduling in Fork-Join Queueing Models: Bounds and Ap-

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

[41] Adrian Šošić, **Wasiur R. KhudaBukhsh**, A. M. Zourbir, and Heinz Koeppl. 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 Koeppl. 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 Koeppl. 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 Koeppl, 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 Koeppl, 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`.