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A Mathematical Model of Passenger Transport

We develop a stochastic model in which a recursive formula is derived for computing the mean value of income from sales of bus tickets. The model takes into consideration basic variable costs (driver's wages and fuel for the bus) and the flow of passengers is given by a Poisson process.

The recursive formula for the mean income is in the form of a system of difference equations with a random inhomogeneous part. This kind of difference equations have been investigated in [1], [2], [5]. The main results discussed here are described in [3], [4].

References

[1] K. Janglajew, *Moment equations for stochastic difference equations*, Proceedings of the Sixth International Conference on Difference Equations and Applications, New Progress in Difference Equations (ed. B. Aulbach, S. Elaydi et al.), CRC Press, 2004, 479–484.

[2] K. Janglajew, O. Lavrenyk, *The calculation of the gain for a stochastic economic system*, Fourth International Conference on Difference Equations and Applications ICDEA 98, Poznań 1998, 173–176.

[3] K. Janglajew, O. Lavrenyk, *A mathematical model of passenger transport*, Miscellanea Algebraicae 5 (2001), no. 2, 55–62.

[4] K. Janglajew, O. Lavrenyk, *A stochastic model of passenger transport*, Proceedings of the First International Conference on Informatics in Control, Automation and Robotics ICINCO 2004, Vol. 3, INSTICC Press, 2004, 198–202.

[5] K. Janglajew, K. Valeev, *Moments of solutions of linear difference equations*, Proceedings of the Eight International Conference on Difference Equations and Applications (ed. S. Elaydi et al.), Chapman and Hall/CRC, 2005, 179–184.