

**Tomović, Siniša; Ognjanović, Zoran; Doder, Dragan**

**Probabilistic common knowledge among infinite number of agents.** (English) Zbl 06507043

Destercke, Sébastien (ed.) et al., Symbolic and quantitative approaches to reasoning with uncertainty. 13th European conference, ECSQARU 2015, Compiègne, France, July 15–17, 2015. Proceedings. Cham: Springer (ISBN 978-3-319-20806-0/pbk; 978-3-319-20807-7/ebook). Lecture Notes in Computer Science 9161. Lecture Notes in Artificial Intelligence, 496-505 (2015).

Summary: We introduce an epistemic logic with probabilistic common knowledge and infinitely many agents, and provide its strong completeness for the class of measurable structures.

For the entire collection see [\[Zbl 1316.68008\]](#).

**MSC:**

**68T37** Reasoning under uncertainty in the context of artificial intelligence

**Keywords:**

probabilistic epistemic logic; strong completeness; probabilistic common knowledge; infinite number of agents

**Full Text:** [DOI](#)

**References:**

- [1] Doder, D., Ognjanović, Z., Marković, Z.: An axiomatization of a first-order branching time temporal logic. *J. Univ. Comput. Sci.* 16(11), 1439–1451 (2010) · [Zbl 1216.03033](#)
- [2] Josphe, M.A., Halpern, Y.: Decidability and expressiveness for first-order logics of probability. *Inf. Comput.* 112, 1–36 (1994) · [Zbl 0799.03017](#) · [doi:10.1006/inco.1994.1049](#)
- [3] Fagin, R., Halpern, J.Y.: Reasoning about knowledge and probability. *J. ACM* 41(2), 340–367 (1994) · [Zbl 0806.68098](#) · [doi:10.1145/174652.174658](#)
- [4] Fagin, R., Halpern, J.Y., Moses, Y., Vardi, M.Y.: Reasoning About Knowledge. The MIT Press, Cambridge (1995) · [Zbl 0839.68095](#)
- [5] Fagin, R., Halpern, J.Y., Megiddo, N.: A logic for reasoning about probabilities. *Inf. Comput.* 87(1–2), 78–128 (1990) · [Zbl 0811.03014](#) · [doi:10.1016/0890-5401\(90\)90060-U](#)
- [6] Geanakoplos, J.: Common knowledge. In: Aumann, R., Hart, S. (eds.) *Handbook of Game Theory*, vol. 2, pp. 1438–1495. Elsevier (1994) · [Zbl 0925.90082](#)
- [7] Halpern, J.Y., Shore, R.A.: Reasoning about common knowledge with infinitely many agents. *Inf. Comput.* 191(1), 1–40 (2004) · [Zbl 1078.03014](#) · [doi:10.1016/j.ic.2004.01.003](#)
- [8] Halpern, J.Y.: Reasoning about knowledge: a survey. In: Gabbay, D., Hogger, C.J., Robinson, J.A. (eds.) *Handbook of Logic in Artificial Intelligence and Logic Programming*, pp. 1–34. Oxford University Press, Oxford (1995)
- [9] Halpern, J.Y., Moses, Y.: Knowledge and common knowledge in a distributed environment. *J. ACM* 37(3), 549–587 (1990) · [Zbl 0699.68115](#) · [doi:10.1145/79147.79161](#)
- [10] Halpern, J.Y., Tuttle, M.R.: Knowledge, probability, and adversaries. In: *Proceedings of 8th ACM Symposium on Principles of Distributed Computing*, pp. 103–118 (1989) · [Zbl 0783.68120](#) · [doi:10.1145/72981.72988](#)
- [11] Halpern, J.Y., Moses, Y.: A guide to completeness and complexity for modal logics of knowledge and belief. *Artif. Intell.* 54, 319–379 (1992) · [Zbl 0762.68029](#) · [doi:10.1016/0004-3702\(92\)90049-4](#)
- [12] van der Hoeck, W.: Some consideration on the logics  $\backslash [ P_{\{F\}} D \backslash ] P F D$ . *J. Appl. Non-Classical Log.* 7(3), 287–307 (1997) · [Zbl 0885.03022](#) · [doi:10.1080/11663081.1997.10510916](#)
- [13] Ikodinović, N., Ognjanović, Z., Rašković, M., Perović, A.: Hierarchies of probabilistic logics. *Int. J. Approximate Reasoning* 55(9), 1830–1842 (2014) · [Zbl 1433.03061](#) · [doi:10.1016/j.ijar.2014.03.006](#)
- [14] Ilić-Stepić, A., Ognjanović, Z., Ikodinović, N.: Conditional p-adic probability logic. *Int. J. Approximate Reasoning* 55(9), 1843–1865 (2014) · [Zbl 1433.03062](#) · [doi:10.1016/j.ijar.2014.02.001](#)
- [15] Stepić, A.I., Ognjanović, Z.: Complex valued probability logics. *Publications de l'Institut Mathématique*, N.s. tome 95(109), 73–86 (2014) · [Zbl 06694531](#)
- [16] de Lavalette, G.R., Kooi, B.P., Verbrugge, R.: Strong completeness for propositional dynamic logic. In: Balbiani, R., Suzuki, N.-Y., Wolter, F. (eds.) *AiML2002 Advances in Modal Logic*, pp. 377–393. Institut de Recherche en Informatique de Toulouse

IRIT (2002)

- [17] Milošević, M., Ognjanović, Z.: A first-order conditional probability logic. *Log. J. IGPL* 20(1), 235–253 (2012) · [Zbl 1251.03030](#) · [doi:10.1093/jigpal/jzr033](#)
- [18] Milošević, M., Ognjanović, Z.: A first-order conditional probability logic with iterations. *Publications de L'Institute Mathématique, n.s.* 93(107), 19–27 (2013) · [Zbl 1313.03008](#)
- [19] Ognjanović, Z., Perović, A., Doder, D.: A first-order dynamic probability logic. In: van der Gaag, L.C. (ed.) *ECSQARU 2013. LNCS*, vol. 7958, pp. 461–472. Springer, Heidelberg (2013) · [Zbl 1390.03022](#) · [doi:10.1007/978-3-642-39091-3\\_39](#)
- [20] Ognjanović, Z., Marković, Z., Rašković, M., Doder, D., Perović, A.: A probabilistic temporal logic that can model reasoning about evidence. *Ann. Math. Artif. Intell.* 65(2–3), 217–243 (2012) · [Zbl 1269.03033](#)
- [21] Ognjanović, Z., Rašković, M.: Some first order probability logics. *Theoret. Comput. Sci.* 247, 191–212 (2000) · [Zbl 0954.03024](#) · [doi:10.1016/S0304-3975\(98\)00341-7](#)
- [22] Ognjanović, Z., Rašković, M.: Some probability logics with new types of probability operators. *J. Log. Comput.* 9(2), 181–195 (1999) · [Zbl 0941.03022](#) · [doi:10.1093/logcom/9.2.181](#)
- [23] Perović, A., Ognjanović, Z., Rašković, M., Marković, Z.: A probabilistic logic with polynomial weight formulas. In: Hartmann, S., Kern-Isberner, G. (eds.) *FoIKS 2008. LNCS*, vol. 4932, pp. 239–252. Springer, Heidelberg (2008) · [Zbl 1138.03315](#) · [doi:10.1007/978-3-540-77684-0\\_17](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.