



# 學術報告

## Payment Channel Networks for Blockchain-based Cryptocurrencies



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**Biography:** Guoliang Xue, an IEEE Fellow, is a Professor of Computer Science and Engineering at Arizona State University. He earned a PhD degree from the University of Minnesota, an MS degree, and a BS degree, both from Qufu Normal University. His research interests include resource allocation in computer networks, security and survivability issues in networks, and machine learning enabled crowdsourcing. He is an Area Editor of IEEE Transactions on Wireless Communications for the Wireless Networking Area overseeing 12 editors. He is a past editor of IEEE/ACM ToN, and Computer Networks. He was a TPC co-chair of IEEE INFOCOM2010 and a co-General Chair of IEEE CNS2014. He is an IEEE Fellow. He served as the VP-Conferences of the IEEE ComSoc in 2016 and 2017.

Although cryptocurrencies have witnessed explosive growth in the past year, they have also raised many concerns. Suffering from the large overhead of global consensus and security assurance, even leading cryptocurrencies can only handle up to tens of transactions per second, which largely limits their applications in real-world scenarios. Among many proposals to improve cryptocurrency scalability, one of the most promising and mature solutions is the payment channel network (PCN), which offers off-chain settlement of transactions with minimal involvement of expensive blockchain operations. We look at the application of PCN in blockchain-based cryptocurrencies, investigate the problem of payment routing in PCN, as well as the challenges and opportunities in this area.