

INTELLECTUAL PROPERTY IN QUANTUM COMPUTING AND MARKET POWER:
A THEORETICAL DISCUSSION AND EMPIRICAL ANALYSIS

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ABSTRACT

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Mauritz Kop is Stanford Law School TTLF Fellow and Visiting Scholar at Stanford University, Founder of MusicaJuridica and strategic intellectual property lawyer at AIRecht, a technology consultancy firm based in Amsterdam. His present cross-disciplinary, comparative research focuses on human-centered AI, quantum-ELSPI and sustainable disruptive innovation policy pluralism.

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This Article

One of the central goals of intellectual property rights (IPRs) and related rights is to incentivize and reward creative and innovative efforts that promote scientific and technical progress, and stimulate fair competition through the distribution and commercialization of technologies. Yet, an excessive proliferation of exclusive rights can also result in fundamentally anti-competitive environments with potentially negative effects on scientific research, product development, fair distribution, and equitable access to the technology. Hence, a reasonable balance must be found between the stimulation of sustainable innovation and competition, the promotion of scientific research, and protection through IPRs. To reconcile these factors, each new technology has led to judicial responses and even modifications to the law.

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We are on the verge of a technological revolution associated with quantum technologies, including quantum computing and quantum-AI hybrids. Its complexity and global significance is creating challenges, which could not have been foreseen when the IP system was developed.

This article utilizes the insights gained from qualitative and quantitative studies to (a) inquire which IPRs and related rights are currently directed to quantum computing, and to (b) examine whether the strategic use of overlapping IPRs might lead to innovation distortions such as excessive anticompetitive effects and underuse associated with property fragmentation. Emphasis is laid on the question if, and if so to what degree, IP portfolio approaches could result in inappropriate proliferations of exclusive rights, raise anticommons concerns, and denote unwanted concentrations of first mover market power. It concludes by outlining potential proactive responses to mitigate these risks, while addressing the major future open and closed innovation opportunities, implications and challenges posed by quantum technology in general, and quantum computing in particular.

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