The 2020s in MRI: Precision, Integration, and Open Science

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In the past few years, MRI has undergone rapid development — from the expansion of ultra-high-field (UHF) systems to new ways of combining MR with other techniques. In this talk, I will highlight recent advances in UHF MRI, including enabling technologies such as advanced RF coils, parallel transmission, and improved shimming methods. I will show how combining MR with approaches like two-photon microscopy and calcium imaging helps us better understand the origins and limits of the MR signal. I will also briefly mention how AI-based methods are being explored to enhance image acquisition and reconstruction, along with ongoing efforts in standardization and data sharing that aim to support more reproducible and collaborative research.