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The Electron-Ion Collider - Questing for the Femtotechnology

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The proton and neutron, known as nucleons, are the fundamental building blocks of all atomic nuclei and make up essentially all the visible matter in the universe, including the stars, the planets, and us. The nucleon itself has a complex internal structure, and both theory and technology have now reached a point where human is capable of exploring the inner dynamics and structure of nucleons and nuclei at the sub-femtometer distance, which is expected to lead to a new emerging science of nuclear femtography. In this talk, I will demonstrate that the newly proposed Electron-Ion Collider (EIC) will be the most powerful tomographic scanner able to precisely image quarks and gluons inside the proton and nuclei. It is also a precision microscope that allows us to see and explore the dynamics binding quarks and gluons together to form hadrons. The EIC will address the most compelling unanswered questions about the elementary building blocks of the visible world to take us to the next frontier of the Standard Model of physics.