Using the TPC to understand collisions between relativistic heavy ions

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The extremely high charge particle multiplicities produced in relativistic heavy ion collisions and the desire to identify particle species and momenta over as large an acceptance as possible has led to the TPC being at the heart of many of our experiments. In this talk I will highlight some of the pioneering designs used over the past 40 years, including the ongoing upgrades to STAR and ALICE's TPCs, and current plans for their implementation at future experiments. In addition, I will emphasize the important role the TPC has played in enabling many of our key results.