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Probing the Properties of the Big Bang Quark Matter

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The combination of experiments at the Relativistic Heavy Ion Collider and calculations of QCD thermodynamics done using the methods of lattice gauge theory are revealing the properties of the matter that filled the universe in the microseconds after the big bang. I will present a look at what we have learned recently, and what we may hope to learn soon. Given that the former includes surprises—who could have guessed that the first property of the quark-gluon plasma we would learn about from RHIC would be its shear viscosity, leave apart that the quark-gluon plasma would prove to be such an ideal liquid? The latter comes with no guarantees. Along the way, I will mention an insight that has come from calculations done using AdS/CFT dualities first developed by string theorists.