Bootstrapping quantum field theory: past, present and future

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Quantum field theory was established about a hundred years ago and is the result of combining the principles of quantum mechanics and the special theory of relativity. Historically, some of the founding fathers were at high unease as intermediate calculations led to infinities. A different approach, sometimes called the analytic S-matrix or the bootstrap, relying on basic principles such as causality and unitarity, was put forward. A resurgence of these fields has taken place now since their power has not been tapped to the fullest, and are the most active fields of research in theoretical physics and spurring developments in computer algebra. In this article, after recalling the history of this field, we highlight some of the past and recent contributions from India.

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