APR20-2020-000823

Abstract for an Invited Paper
for the APR20 Meeting of
the American Physical Society

The roots of LIGO data analysis and the GW stochastic background challenge

BRUCE ALLEN, Max Planck Institute for Gravitational Physics, Hannover, Germany and U. of Wisconsin – Milwaukee, USA

I'll pick up after the early history presented by Schutz. By the mid-90s, the foundations for gravitational wave data analysis had been established, but many of the methods had never been tried on actual instrumental data. I'll discuss how these methods were tested and further developed on data from the LIGO 40m prototype, starting with a group of Kip Thorne's students and postdocs, and morphing into systems still being used today. I will then talk about one of the most beautiful and exciting possibilities, which Rai Weiss has always championed: the detection of a cosmological background of stochastic gravitational waves. In the same way as the electromagnetic cosmic background radiation gives us a clear picture of the universe when it was a few hundred thousand years old, the gravitational wave stochastic background (when detected!) will give us insight into the behaviour of the universe both at current times and at very early times.