Our Australian hosts deserve great credit for the efficient arrangements and providing the congenial environment for a most pleasant and valuable symposium.

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PARIS SYMPOSIUM ON GRAVITATIONAL WAVES

A colloquium entitled "Ondes Et Radiations Gravitationnales" was organised by the Centre National de la Recherche Scientifique and the Paris University at the Institut Henrie Poincare, Paris between June 18-22, 1973. About a hundred scientists working both on theoretical as well as experimental aspects in various countries participated in the symposium.

As the title of the symposium suggests, the main interest was centred round recent experiments on detection of gravitational waves. In addition to the first wave-detector constructed by Weber at Maryland and Chicago in the U.S.A., several new aluminium cylinder wave-detectors have been installed at various laboratories in Europe. Report on the wave-detection experiment in the U.S.S.R. could not be presented as scientists from the U.S.S.R. could not attend.

Last year Kafka had reported that with the Munich detector he had not recorded any coincidences and so Weber's findings did not get support from the experiments. At this symposium, Weber developed certain criteria for interpreting the results of his experiments. Kafka also devoted his lecture to analysing Weber's criteria and tried to show that whatever way one looks at his observations one cannot escape the conclusion that there are no coincidences to mark the oscillations induced by Gravitational Waves. A very lively discussion followed the two talks, which was continued at coffee-breaks and during round table meetings ("Table Ronde") in the afternoons. Ultimately it was felt that Professor Weber should visit Munich and see whether the experiment there essentially repeats his Maryland experiment and settle the issue jointly at Munich. Reports of progress in the wave-detector experiments at Frascati (Italy) and Meudon (France) were also presented at the symposium. Participants visited the Meudon observatory near Paris to see the gravitational wave-detector.

On theoretical side, Taub described his "two-timing" method of Variation for Gravitational Waves. The work has now appeared in print (Taub and MacCallum: Comm. Math. Phys. **30**, 153, 1973). R. Davis discussed issues in gravitational wave detection in space missions. In his opinion, we must improve our radar range measurements by a factor of at least 10^{-6} in order to measure the effects of a gravitational wave passing between us and a satellite. C. Misner talked about gravitational radiation emitted when a particle of small mass m is scattered by a black hole ($m << b/y$ where y is the Lorentz factor and b is the scattering width). Professor Lichnerowiez gave a talk on gravitational shock waves in which he effectively used his hydrodynamical methods to treat gravitational shocks.

There were some talks on Astrophysics, Cosmology and General Relativity. Trautman described what he calls Einstein-Cartan theory of gravitation, which is essentially a theory of gravitation with spin. He described, in brief, the theory in the form in which he had presented it in G.R.G. Journal (**3**, 167, 1972). He also derived the modified Friedman equation for a universe filled with "spinning" dust (Nature Phys. Sci., **242**, 7, 1973), and showed that his universe will not contract to a point singularity. Sciama gave a very interesting talk on Mach's principle. He started with a rough statement of Mach's principle that in some sense the metric is to be determined entirely by the energy tensor and not partly by that tensor and partly by predetermined geometry. And then he gradually developed the principle as he sees it. He concluded that metrics satisfying $R_{ik}=0$ are not consistent with Mach's principle, but the Robertson-Walker metric is. He therefore appealed to the participants to rush out of the hall and tear off all posters which indicated the way to the symposium with the help of the equation $R_{ik}=0$. Professor Banazzola, one of the organizers of the symposium got up to counsel patience because one of these posters also showed the equation $R_{ik} - \frac{1}{2} g_{ik} R = ?$ anticipating Professor Sciama's wrath ! !

Deser tried to look at the problem of quantization of the gravitational field from a novel angle. In his talk entitled, "General Relativity as a Consequence of Quantum Mechanics" he took Weinberg's work done years ago as a starting point. He described the quantum theory of a particle (as distinct from the quantum field theory) of spin 2, mass 0 and introduced assumptions which would lead to its interpretation as General Relativity, taking care that the resulting theory continues to remain self-consistent.

Everyday in the afternoons, there were round table discussions. Topics for Table Ronde were : Non-orthodox theories ; gravitational field in a continuous medium ; quantization ; wave-detetection, cosmology and astrophysics. At these meetings, small communications of fifteen minute duration were read and discussed.

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