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Gravitational wave attenuation through interactions with charged particles

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It has been previously shown that the energy lost from an incident gravitational wave (GW) on a cloud of charged particles can manifest itself as an electromagnetic field, causing the GW to attenuate. Furthermore, it can be shown that the presence of the field and the circumstances in which it was generated leads to currents and subsequently magnetic fields. We plan to calculate how much energy would be lost by a GW to the cloud of charged particles. We also plan on providing more evidence for the idea that gravitational waves could have created the first magnetic fields in the early universe.

Collaboration

The College of New Jersey

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