

Gravitomagnetic field and gravitational waves

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We discuss here the possibility to detect high frequency gravitational waves by exploiting gravitomagnetic effects. In the laboratory frame, using the construction of the Fermi frame, the field of a gravitational wave can be described in terms of gravito-electromagnetic fields that are transverse to the propagation direction and orthogonal to each other. In particular, the gravito-magnetic field acts on spinning particles and under suitable conditions, a gravito-magnetic resonance may appear: this phenomenon can be used to design a new type of gravitational wave detectors, based on collective spin excitations, e.g. spin waves in magnetized materials.

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