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On the repulsive Casimir force using metamaterials. FELIPE DA ROSA, DIEGO DALVIT, PETER MILONNI, Los Alamos National Laboratory — It is known for quite some time that Casimir repulsion between a dielectric and a magnetodielectric plate is possible, and the development of metamaterials brought this phenomenon closer to experimental possibilities. The purpose of this work is to discuss as realistically as possible the role that metamaterials play in the Casimir force and bring to the surface some aspects of this issue that were previously rarely mentioned, such as the typical anisotropy of metamaterials and the presence of a Drude background in its electric permittivity. We also study the Casimir and Polder force between an atom and a metamaterial, since this setup may be more suitable to the detection of repulsion forces.

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