## Abstract Submitted for the MAR10 Meeting of The American Physical Society

"Anatomic approach" to study the Casimir effect<sup>1</sup> FRANCESCO INTRAVAIA, Theoretical Division, MS B213, Los Alamos National Laboratory, Los Alamos, NM87545, USA, HARALD HAAKH, CARSTEN HENKEL, Institut fuer Physik und Astronomie, Universitaet Potsdam, 14476 Potsdam, Germany — The Casimir effect, in its simplest definition, is a quantum mechanical force between two objects placed in vacuum. In recent years the Casimir force has been the object of an exponentially growing attention both from theorists and experimentalists. A new generation of experiments paved the way for new challenges and spotted some shadows in the comparison to theory. Here we are going to isolate different contributions to the Casimir interaction and perform a detailed study to shine new light on this phenomenon. As an example, the contributions of Foucault (eddy current) modes will be discussed in different configurations. This "anatomic approach" allows to clearly put into evidence special features and to explain unusual behaviors. This brings new physical understanding on the undergoing physical mechanisms and suggests new ways to engineer the Casimir effect.

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