A Concept of Absolute Polarization in Dielectrics

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***Abstract* — It is enunciated in this paper that the volume density of the dipole moment of the induced charges in a dielectric doesn't in general qualify as a field in terms of which the actual induced charge distribution in the dielectric can be expressed as a volume charge density inside the interior of the dielectric equal to the negative of the divergence of that field and a surface charge density on the boundary of the dielectric equal to the component of that field in the direction of the outward normal to the boundary, unless the induced charge density inside the dielectric vanishes. The field that qualifies to satisfy the second criterion is in the general case named "absolute polarization" and the interconnection between the two polarizations is established. It is then demonstrated that although a few major equations of linear media electrostatics change, the results for the field of a uniformly polarized object remain unchanged, and all the existing methods of analytical evaluation can be justified if the 'polarization' defined by the first criterion of being a field that equals the volume density of the dipole moment of bound charges is just replaced by the "absolute polarization", the concept of which is introduced here.**