History of the nickname *PNP:* One man's view

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The name *PNP* for Poisson Nernst Planck (1) was introduced deliberately as a pun in a Biophysical Society workshop (2) to emphasize the analogy with transistors, and importance of computing the electric field, as opposed to assuming it was constant (3-5).

As in transistors, the electric field of *PNP*—like the electric field in transistors—is not constant as conditions change. Electric forces must be computed as a consistent mathematical solution of the relevant model. Most previous work on Nernst-Planck equations in biology and chemistry (for example, (6-12)) did not mention the analogy with transistors (however, see (13-15)); the importance of permanent charge (i.e., 'doping'); and most importantly the crucial role of the ***variable*** shape (i.e., 'conformation') of the electric field and its large changes when bath concentrations or potential is changed (in contrast to earlier approaches that used more or less constant fields, reviewed, for example, in (8,16). Note the title 'Computing the Field' of the early paper (17).

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