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Gab-less semiconductor model for relativistic particles

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It is an old idea of ours (H. B. "Nielsen Dual Models" section 6 "Catastrophe Theory Program" Scottish University Summer school 1976?) that a most general material with only translation symmetry, but otherwise no symmetries should generically (in general) have some small regions in quasi momentum space, where you "see" an approximate Weyl equation behavior. The Weyl equation is the relativistic equation for a (left handed) neutrino. This remark means that one could imagine, that there were behind the Standard Model of High energy physics, a very general crystal model with very little symmetry. Even for the Yang Mill or electrodynamics types fields a similar philosophy is possible. There are though some problems with this solid-state type of model beyond the Standard model, for which we thought have some remedy by means of homolumo gap effects. Now a days, the kind of material on which we speculated is being found and very high conductivity achieved for them.

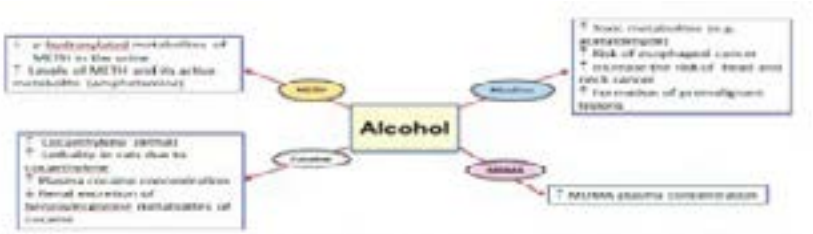

Figure 1: Effects of alcohol on the pharmacokinetics of methamphetamine (METH), 3,4-methylenedioxymethamphetamine (MDMA), cocaine, and nicotine. (↑: increase or enhancement; ↓ decrease or deterioration).

Biography

Holger Bech Nielsen is Professor emeritus at the Niels Bohr Institute and reputed for being one of the inventors of string theory, vortex lines line paper with P Olesen, Nielsen-Ninomiya (Foerster) No go theorem for chiral Fermions on the lattice, Forggat-Nielsen mechanism for masses of fermions in the Standard Model, and has been very keen on developing his dream of Random Dynamics, that the laws of nature shall come out automatically almost whatever the fundamental theory is taken to be. He gives many popular talks on high energy physics. Recently, he works on the suggested new law of nature Multiple Point Principle, from which coupling constants get restricted (predicted the Higgs mass). The Humboldt prize visiting DESY and several ca 8month visits to CERN.

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