

STARS2015 - 3rd Caribbean Symposium on Cosmology, Gravitation, Nuclear
and Astroparticle Physics / SMFNS2015 - 4th International Symposium on
Strong Electromagnetic Fields and Neutron Stars

Contribution ID: 89

Type: **Talk**

On the large field stability in the electroweak model

Thursday 14 May 2015 09:30 (30 minutes)

The magnetic field dependence of vacuum energy of the Weinberg-Salam model (WSM) is investigated. It follows that the W particles contribution makes the full potential positive for extremely large fields. This changes the situation with respect to QED. Thus, the asymptotic freedom of this theory helps to solve the undesirable negative values of the Heisenberg-Euler potential at large magnetic fields in QED. The one loop potential monotonically grows up to a critical magnetic field corresponding to a non abelian instability associated to the W fields.

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Track Classification: SMFNS2015