

ELECTROWEAK PHASE TRANSITION IN A HYPERMAGNETIC FIELD

V. V. Skalozub, V. I. Demchik

Dnipropetrovsk National University
(13, Naukovy Prov., Dnipropetrovsk 43625, Ukraine)

The electroweak phase transition in a strong hypermagnetic field H_Y is investigated in the Standard Model. We use the effective potential of scalar and hypermagnetic fields at finite temperature, which takes into consideration the contributions of one-loop and ring diagrams of all fermions and bosons of the model. The only free parameter is the Higgs boson mass chosen to be in the energy interval $75 \leq m_H \leq 115$ GeV. It is found that, for the field strengths $H_Y \sim (10^{22} \div 10^{23})$ G, the electroweak (EW) phase transition is of first order but the baryogenesis condition is not fulfilled. For stronger fields, it turns to crossover. The stability of the vacuum in a field at high temperatures is studied. A comparison with the results of other approaches is done.