Summer term 2016

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Will be discussed: 21th week of year

Problems in Supersymmetry

Sheet 7

Problem 21: Quantum Corrections to the Wess-Zumino model

Take the Lagrangian of Problem 20

$$\mathcal{L} = \frac{1}{2} \partial_{\mu} A \partial^{\mu} A + \frac{1}{2} \partial_{\mu} B \partial^{\mu} B + \frac{i}{2} \bar{\psi} \partial \psi - \frac{1}{2} m^{2} (A^{2} + B^{2}) - \frac{1}{2} m \bar{\psi} \psi - mg A (A^{2} + B^{2}) - \frac{1}{2} g^{2} (A^{2} + B^{2})^{2} - g \bar{\psi} (A - i \gamma_{5} B) \psi$$

and calculate the one-loop corrections to the Vacuum energy as well as to the mass of the Fields A, B and ψ .