CHAPTER 6

Conclusion

In this thesis we consider the particle with SPP in the presence of magnetic field. This problem is related to Quantum Hall problem. We approach this problem by using the Feynman Path Integral method and we found that the free energy and the partition function can be obtained in analytical forms. We also include a magnetic field into the Lagrangian and again we can obtain the analytical solution which leads to the analytical expression for both the free energy and partition function. Calculated results for the free energy plotted against $1/kT$ are given. The cases of the particles with HP, with SPP and with SPP in the magnetic field are given in Figs. (5.1), (5.2) and (5.4)-(5.8), respectively. As can be seen, the presence of a magnetic field smooths out the most singularities arising from SPP, except one. Physically, applying a magnetic field over SPP smooths out the free energy of the system (see Figs. (5.4)-(5.8)). The reason is that the applied magnetic field forces the particle into a free and circular motion. This problem will be very important in the case of electron tunnelling between two Landau levels in the Quantum Hall problem that would be another profound study.