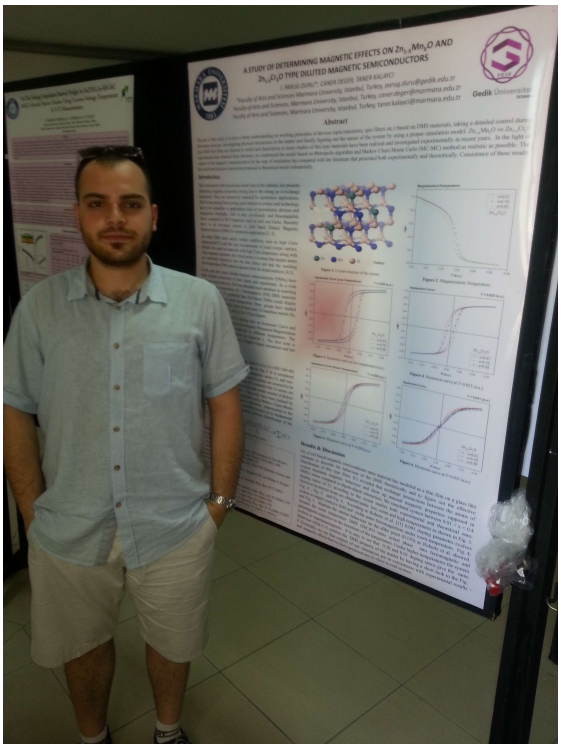
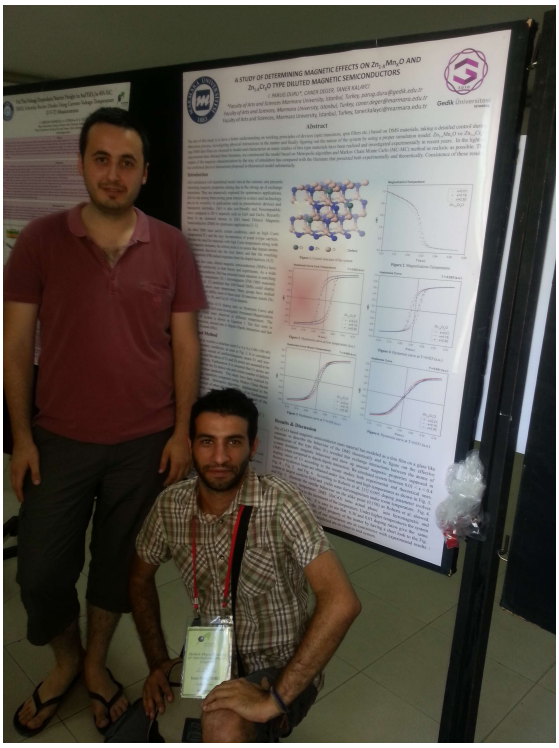
TFD31 – TÜRK FİZİK DERNEĞİ ULUSLARARASI FİZİK KONGRESİ

31. si Bodrumda 21-24 Temmuz 2014 tarihleri arasında düzenlenen Türk Fizik Derneği Uluslararası Fizik Kongresine bölüm araştırma görevlilerimiz Caner Değer ve Taner Kalaycı ile bölüm doktora öğrencimiz İzzet Paruğ Duru "DETECTION OF LOCALIZABLE ENTANGLEMENT ON FERROMAGNETIC HEISENBERG CHAIN: A QUANTUM MONTE CARLO STUDY" [1] ve "A STUDY OF DETERMINING MAGNETIC EFFECTS ON ZN1-XMNXO AND ZN1-XCRXO TYPE DILUTED MAGNETIC SEMICONDUCTORS" [2] başlıklı çalışmaları ile katılım göstermişlerdir.





ÖZETLER

[1] In recent years, a great body of research has focused on improving quantum algoritms on the way to architect quantum computers. Thereby, entanglement phenomen still maintains its importance while simulating quantum systems by using Monte Carlo algorithms. Since localizable entanglement studies were performed, the upper and lower boundries of entanglement has determined both in ferromagnetic and antiferromagnetic systems. However, the aim of this study is to define alike boundries of a 1/2 spin Heisenberg ferromagnetic chain. As Suzuki and Trotter reported a decomposition method to divide the Heisenberg Hamiltonian into symmetric parts is used to evaluate the partition function. World-Line Monte Carlo is applicated to calculate the correlations of the square lattice in contrast to the equations of correlation functions. In conlusion, limits of entanglement is presented considering the system exposed an an external magnetic field on both -x and -z directions.

[2] The aim of this study is to have a better understanding on working principles of devices (spin transistors, spin filters etc.) based on DMS materials, taking a detailed control during fabrication process, investigating physical interactions in the matter and finally figuring out the nature of the system by using a proper simulation model. Zn1-xMnxO ve Zn1-xCrxO type DMS thin films are choosed to model and characterize as many studies of this type materials have been realized and investigated experimentally in recent years. In the light of experimental data obtained from literature, we constructed the model based on Metropolis algorithm and Markov Chain Monte Carlo (MC-MC) method as realistic as possible. The outputs of the magnetic characterization by the way of simulation has compared with the literature that presented both experimentally and theoretically. Consistence of these results has confirmed physical interactions proposed in theoretical model substantially.