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# PECULIARITIES OF QUANTUM MAGNETOTRANSPORT IN $In_{0.53}Ga_{0.47}As/In_{0.52}Al_{0.48}As$ HETEROSTRUCTURES GROWN ON (100)InP

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ABSTRACT

Magnetotransport properties of the Si $\delta$-doped $In_{0.53}Ga_{0.47}As/In_{0.52}Al_{0.48}As$ heterostructures grown on (100)InP substrates were investigated by performing classical Van der Pauw Hall effect as well as high field quantum magnetotransport measurements. The results of the conventional Hall measurements are ambiguous because the mobility obtained at liquid helium occurred to be smaller than at room temperature. The qualitative analysis of the conductivity tensor revealed at least two conducting channels. Thus, the properties of whole structure are limited by the low mobility of the parasitic parallel conduction layer. On the other hand, the fast Fourier transform of the quantum magnetooscillations consists of a lot of frequencies. None of them can not be attributed to the presence of the two-dimensional electron gas (2DEG) in a single quantum well. We interpret our rich Fourier spectrum as due to quantum interference (QI) between open electron path commonly found in superlattices structures.