networks. The QPSK modulation is a suitable choice, due to its power efficiency and known structure. One of the most important problems in phase modulations is the carrier phase synchronization between the transmitter and the receiver, and there are several analog and digital methods for this purpose. The commercial Modems can be synchronized during 180 to 300 received symbols.

In this paper we have presented a fast carrier phase recovery method by a combination of analog Costas loop and digital PLL loop, simultaneously. The results of simulations show that the synchronization will be accomplished during 40 symbols, without any disturbance in the eye-diagram .

SD8: Data Communication Networks

Static Routing with Considering Network-Layer and Physical-Layer in Wavelength-Routed Optical Networks

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Abstract:
Routing and wavelength assignment, known as RWA problem, is an important issue for cost effective Utilization of network resources, in wavelength-routed optical networks.Solving the RWA problem considering all constraintsof network and physical-layers, simultaneously, is a big challenge.To this time only some of these constraintshave been taken into account. Herein, a new static routingapproach is developed considering both the network-layer and the physical-layer constraints. The proposed approach consistsof a comprehensive cost model and an efficient routing algorithm.Routing algorithm performance is measured in termsof resource utilization, and convergence rate under different conditions.

Irregular Cellular Learning Automata and Its Application to Clustering in Sensor Networks

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Abstract:
In this paper, we propose a new generalization of cellular learning automata (CLA) called irregular cellular learning automata (ICLA) which removes the restriction of rectangular grid structure in traditional CLA. This generalization is expected because there are a number of applications which cannot be adequately modeled with rectangular grids. One category of such applications is in the area of wireless sensor networks. In these networks, nodes are usually scattered randomly throughout the environment, so no regular structure can be assumed for modeling their behavior. We propose ICLA as a suitable structure for modeling sensor networks and design a clustering algorithm for these networks based on the proposed structure. Simulation results show that the specified structure can best fit these networks and results in a very efficient clustering pattern in comparison to similar methods.

Cooperative Diversity Techniques Investigation Using Adaptive Modulation

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Abstract:
In recent years, cooperative diversity techniques have gained increased attention as a new way to combat degrading effects of Fading. This method generates a virtual multiple-antenna through single-antenna users in the wireless network. In this paper, we investigate the performance of these techniques when adaptive modulation applied to them. We consider the problem of adaptive rate and power allocation with M-QAM modulation and arbitrary bit error rate, and study the performance of Amplify & Forward scenario in Rayleigh fading channels. We compare these systems with adaptive non-cooperative scenario and calculate saved-energy, achieved through cooperation. Although