noise properties od photo-recieving equipment, is one of defining efficiency of all communication system.

At simulation optical radiation quantum data link losses with absorption and scattering of radiation were taken into an account. Also, situation with presence in the channel of intercepting agent was modelled. Thus two situations were researched:

1) Interception and generation by the malefactor of all photons for optical impulse duration. The given situation allows to model real communication systems.

2) Selection of only one photon for impulse duration. This situation allows to estimate quantum cryptography efficiency protocol at malefactor with the ideal equipment, permitting to realize unauthorized data acsess presence .

Thus, spent researches allowed to estimate efficiency of quantum cryptography protocol BB84 at polarizing modulation usage.

The bibliographic list:

1. Radio-electronic technologies of information safety: Collection of scientific articles / Under. edition. K.E.Rumjantseva. - Taganrog: TSURE, 2002. - With. 145-155.

## ANALYSIS of KEY SEQUENCE METHODS CREATION In MULTI-USER QUANTUM COMPUTER NETWORKS

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The rough development of quantum computers and the technologies connected to them in the recent times reduced to appearance of some revolutionary achievements, capable significantly speed up scientific and technical progress. The quantum cryptography concerns to such an achievements.

Key generation by quantum cryptography methods is carried out immediately during transmission of single photons on a data link. Reliability of these methods is founded on fundamental laws of quantum physics firmness.

Quantum cryptography systems originally were used for communication of separate pairs users. However development and research of similar methods for communication of a great many of users is actual. Researches in the given direction are actively carried on both foreign and domestic centres of science.

As researches have shown known methods of private key allocation use tree-like topology of the network or ring with necessity of additional channels of information interchange usage. In particular, methods of quantum cryptography can be used at passive optical network construction containing the central network controller, connected by a passive optical beam splitter with set of network users. In this scheme quantum behaviour of an optical beam splitter is used. Accordingly, each user will be provided with a unique arbitrary selected bits subset.

Other quantum-cryptography system contains a quantum link with a set of sites including transmitting and reception units, connected with a quantum data link. Transmitting unit generates the light signal representing a sequence of photons, for allocation through the quantum channel. Receiver of the message accepts the light signal radiated by the transmitter and measures quantum statuses of this signal. The given method of optical network organization uses ring topology; however its main virtue is that each of users may be the initiator of data exchange.

Thus. private key allocation method development problem between a great many sequentially located users without additional channels of information interchange is actual. In thw work new method of optical network organization in which there is an allocation of private key with usage of quantum cryptography is offered. The given method is based on a principle measurement - repeated sending off and applicable in systems with modulation on polarization.

Researches also showed, that at immediate usage of given method, exchange process of is characterized by the big percent of errors. However, with introduction to the considered network of subsystem synchronization between polarizing analyzers of users, given method will correspond to protocols used for data exchange between several users.

The given optical network of private key allocation by methods of quantum cryptography can also be applied to network with ring topology.

Main problem of practical implementation of the similar optical network is support of exact synchronization of polarizing analyzers turns of great many sequentially the located users. As the probability of polarized photon passing through the analyzer is proportional to cosine of a corner between direction of polarization and an axis of the analyzer, inaccuracy of synchronization may make units of degrees.

## ФАЗОВЫЕ ПЕРЕХОДЫ МЕТАНА ПРИ ИЗМЕНЕНИИ ТЕРМО-ДИНАМИЧЕСКИХ ПАРАМЕТРОВ ГОРНОГО МАССИВА

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Для построения математической модели фазовых превращений метана примем во внимание, что образование метана в период накопления торфяника и постепенного погребения его под наносы последующих отложений происходило при температурах 150-300$^{o}$C, когда сорбционная способность угля была близка к нулю. В дальнейшем, в процессе инверсии и понижении температуры, часть метана сорбировалась углем, часть оставалась в свободном состоянии как в трещинах и микропорах угля, так и в коллекторах вмещающих пород. Дальнейшее изменение термодинамических параметров угленосной толщи влекло за собой переход свободного газа в гидратированное состояние. Образование гидратов метана происходит либо при низких температурах (t=12-14 $^{o}$C) при $P = 10$МПа, либо при высоком гидростатическом давлении, большем чем в современных условиях. Например, для равновесного состояния гидрата метана [1]