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# PREDICTIVE MODEL AND METHODOLOGY FOR OPTICAL TELECOMMUNICATIONS INFRASTRUCTURE

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**Abstract:** In this article a predictive model and a novel methodology of processing the data measured in the physical model of an optical telecommunications infrastructure is presented. The task is motivated by practical use of the results of experiments in the environment of the telecommunications network. We present an original predictive model and methodology, reflecting the specifics of examined infrastructure. The probabilistic prediction of the occurrence of emergencies is calculated via cluster analysis techniques used in Bayesian approach in the  $n$ -dimensional data space. The predictive model is experimentally verified on real data. Results of experiments are interpreted for practical use in real environment of the telecommunications infrastructure.

Key words: *cluster analysis, crisis management, optical transport network*

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## 1. Introduction

Nowadays, many companies are not prepared to loss of ICT Services. It's only after the service outage that people realize, how much they are dependent on the perfectly functioning telecommunications infrastructure.

After such events, a retrospective analysis takes place to find out what has happened. This eventually leads to a proposal, and sometimes even to the implementation of a backup solution. In the ideal world, everyone should be able to avoid the risk, or could always prepare a backup plan. Avoiding risk is not possible at all times and preparing a backup solution is usually associated with expensive investment. Since the implementation of such solutions is usually associated with the investment, implementation of these solutions is not frequently executed. Absence of back-up solution can therefore eventually become more expensive.

Company management must therefore have sufficient information to consider investment decisions. They must be able to assess whether the imminent loss may threaten the stability of the company. Contingency and disaster recovery planning for the construction of optical infrastructure [1, 15] requires a long-term strategy.

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