



Data analysis methods for infrastructure permanent monitoring

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Safety and management of road networks is of paramount relevance not only under common operational conditions, but also in the case of extreme events, such as earthquakes or other natural hazards. Structural Health Monitoring systems may represent an attractive option for those institutions and companies having in charge the maintenance. Advances in sensing technology and miniaturization of computational devices make possible and reliable the installation of permanent monitoring systems and bring to operators both local and global data records. In this framework, vibration based monitoring represents an effective tool to track relevant modal properties during time by means of automated procedures. In any case, estimates of modal properties are influenced by environmental and operational factors as well as by the damage pointing out the need of discriminating between the different sources of influence.

In the present paper, methodologies and strategies aimed at quantifying the influence of environmental and operational factors on modal parameters of infrastructure components are reviewed and some remarks on the application of blind source separation techniques to this end are proposed.