

SUMMARY INFORMATION ON NEW FINDINGS OF PhD.THESIS

Title: **Dynamic analysis of the elastic double beam-cable-column-truss complex system subjected to moving loads and aerodynamic forces**

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Code: 9.52.01.01

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The new findings of the research

1, Based on the outcomes of researches about the finite element theory of element types and load models, the thesis has set up a linear dynamical analysis algorithm of the double beam-cable-column-truss system, which simulates the double-decker cable-stayed bridge affected by moving loads and aerodynamic force. The TMD energy dissipation device is also considered.

2, From this algorithm, the author has developed the COMLAF_2017 computation program in the Matlab environment, as a linear dynamical analysis tool of the moving loads, aerodynamic force and both of them. The calculation program has proved to be reliable.

3, Survey many problems close to reality, with changes in load parameters, materials, geometry dimensions, with and without TMD devices, to study the effect of these factors on the dynamic parameters of the system. From there, give comments that have scientific and practical implications.

4, Carry out the design of the double beam - cable - column - truss model of standard steel material. Then perform model experiments in the room to examine the dynamic response of the system under one or a convoy of moving loads. The results of the empirical study contribute to verifying the results of theoretical calculations using the COMLAF_2017 calculation

program, the tolerances within the acceptable range, again showing the credibility of the algorithm and the calculation program by the author. In addition, the set of experimental data has contributed to enriching the results of empirical research in this field.

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