

## عنوان مقاله:

A Data Exchange Algorithm for One Way Fluid-Structure Interaction Analysis and its Application on High-Speed Train Coupling Interface

## محل انتشار:

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## خلاصه مقاله:

Domain decomposition is involved in Fluid-Structure Interaction (FSI) analysis to speed up their computations. Non-matched meshes always exist in the interface of these different domains which brings data exchange problem. A load transfer method is investigated in this article to deal with non-matching meshes between fluid and structure. The local nearest neighbor searching algorithm was used in this method to match fluid nodes and structural elements, while thin plate splines with tension were used to deal with data transfer between non-matching meshes in FSI computations, and the corresponding matrix equations for the target points are presented. Implementations of the obtained algorithms were used to solve the one-way FSI problem of the CRH380C high-speed train and the relative error of transferred results was analyzed. The statistical parameters under two algorithms, the TPS model and the model combining both TPS model and nearest interpolation model were compared and the results indicate that the latter can transfer data more accurately.

## کلمات کلیدی:

Load transfer method, Data exchange, High, speed train, Interpolation method, Thin plate spline with tension

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