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Variational Evolutionary Splines for Solving a Model of Temporomandibular Disorders

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Abstract : The aim of this work is to modelize the occlusion of a person with temporomandibular disorders as an evolutionary equation and approach its solution by the construction and characterizing of discrete variational splines. To formulate the problem, certain boundary conditions have been considered. After showing the existence and the uniqueness of the solution of such a problem, a convergence result of a discrete variational evolutionary spline is shown. A stress analysis of the occlusion of a human jaw with temporomandibular disorders by finite elements is carried out in FreeFem++ in order to prove the validity of the presented method.

Keywords : approximation, evolutionary PDE, Finite Element Method, temporomandibular disorders, variational spline
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