

## عنوان مقاله:

Investigation of the flexural response of FRP reinforced RC beams using nonlinear finite element analysis

## محل انتشار:

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## خلاصه مقاله:

Enhancement of the response of reinforced concrete (RC) beams using fiber-reinforced polymer (FRP) reinforcement has become a popular structural technique over the past two decades due to the well-known advantages of FRP composites including their high strength-to-weight ratio and excellent corrosion resistance. This paper presents numerical investigation of 20 concrete beams internally reinforced with GFRP bars without web reinforcement. The accuracy of the non-linear finite element model in ABAQUS software is first validated against experimental data from the literature. The study presents an investigation into the behavior of FRP reinforced RC beams including the evaluation of geometrical properties effects. In particular, the study is focused on the effects of span/depth ratio, the reinforcement ratio and the effective depth of the beam, aiming to correct deficiencies in this area in existing knowledge. It was found that the finite element model is capable of accurately simulating the flexural behavior of FRP reinforced beams. It was able to predict, with high accuracy, the force-displacement response the beam. Results showed that FRP reinforcement is a good solution to enhance the ductility of RC beam members. Moreover, although that increasing in the span/depth ratio of the beam decreases beam's rigidity, but, it also postpones the yielding point in the beam's flexural response and leads to a higher level of displacement ductility for the beam

## کلمات کلیدی:

Reinforce Concrete Beam, FRP, ABAQUS

## لینک ثابت مقاله در پایگاه سیویلیکا:

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