

## عنوان مقاله:

Evaluating Modal Participation Factor of RC Frames

## محل انتشار:

نهمین کنگره بین المللی مهندسی عمران (سال: 1391)

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## نویسندگان:

Maryam Samimifar - M.Sc. Student, Department of Civil Engineering, Shahid Rajaei Teacher Training University

,Asghar Vatani Oskouei - Assistant Professor, Department of Civil Shahid Rajaei Teacher Training University

## خلاصه مقاله:

One of the dynamic characteristics of a structure is modal participation factor, which can be an explanatory of the ratio of roof displacement to the spectral displacement at the elastic period of the structure, if it has been calculated for the first mode. Many applications were defined for this factor such as estimating elastic roof displacement of the structure. This factor also is used in capacity spectrum method and equivalent linearization procedures for specifying an equivalent single degree of freedom system equal to the multi degree of freedom one. Therefore, in this research the modal participation factor of the first mode of several reinforced concrete frames were calculated. These data were used to derive an empirical relation for estimating the first mode participation factor as a function of the number of frame stories. The presented relation shows that the first mode participation factor is increase by increasing the structural height. The stiffness of the structure computed for each time step of a nonlinear dynamic analysis presents different values; therefore, it was investigated how the modal participation factor has changes during the entire time of earthquake and what was its value at the end especially for the first mode. For these purposes, seven scaled earthquake records were used. The results show that mode shapes does not change significantly after damage the participation factors of the first mode of all the frames at the end of nonlinear dynamic time history analysis are obtained bigger than their initial values. In addition, a relation was presented for estimating the final value of first mode participation factor in the case of inelastic structural behavior considering the first mode participation factor of the structure behaving beyond its elastic limits

## کلمات کلیدی:

Modal participation factor, Nonlinear time history analysis, RC frame

## لینک ثابت مقاله در پایگاه سیویلیکا:

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