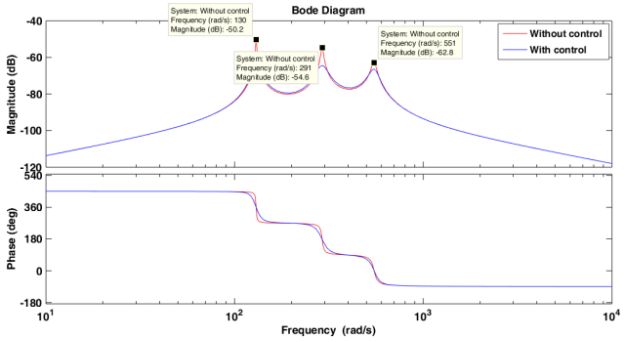

Figure 9: Spectrum of the first three modes of PZT/FGM/PZT beam (k=0.2,Q=10^7, R=1, Rc=100).

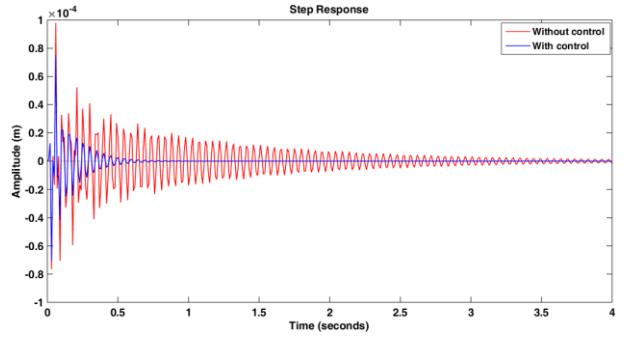

Figure 10: Step response of PZT/FGM/PZT beam (k=0.2, Q=10^7, R=1, Rc=100).

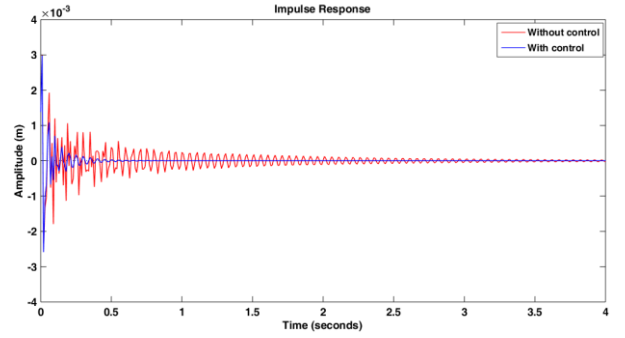

Figure 11: Impulse response of PZT/FGM/PZT beam (k=1, Q=10^7, R=1, Rc=100).

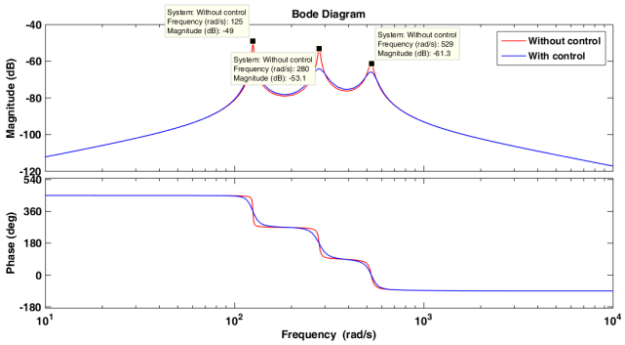

Figure 12: Spectrum of the first three modes of PZT/FGM/PZT beam (k=1, Q=10^7, R=1, Rc=100).

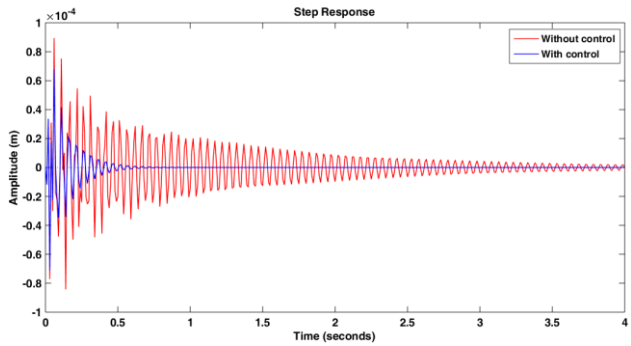

Figure 13: Step response of PZT/FGM/PZT Beam (k=1, Q=10^7, R=1, Rc=100)

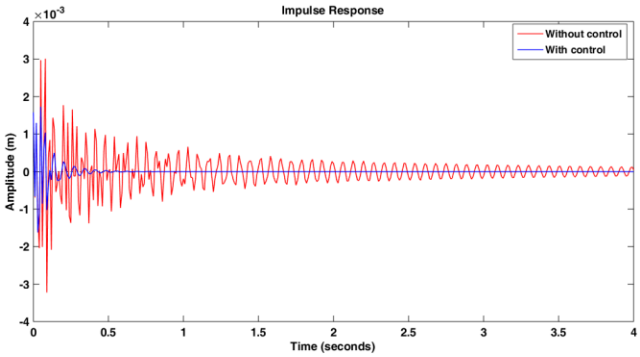

Figure 14: Impulse response of PZT/FGM/PZT beam (k=10, Q=10^6, R=1, Rc=100).

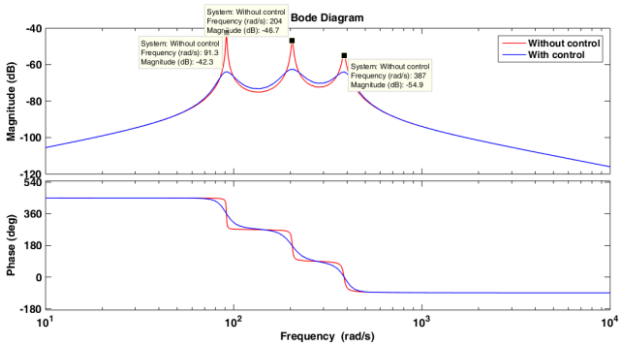

Figure 15: Spectrum of the first three modes of PZT/FGM/PZT beam (k=10, Q=10^6, R=1, Rc=100).

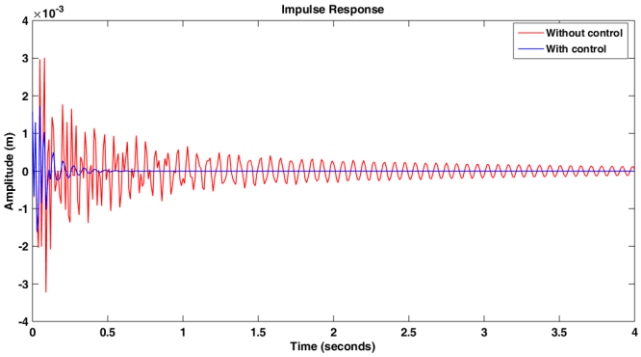

Figure 16: Step response of PZT/FGM/PZT beam (k=10, Q=10^6, R=1, Rc=100).

CONCLUSION

From modeling and numerical simulation results of a composite beam including mass and stiffness of geometrically and mechanically symmetric sensors / actuators, we find that the variation of the exponent of the volume fraction causes a change of the structural and vibratory characteristics of the beam on the one hand, and the active control of its vibrations on the other.

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