# Abstract

This report describes a one-dimensional numerical beam model of a triplex sandwich beam. The triplex sandwich beam consists of a laminate of two glass layers bonded together by a polymer interlayer. For numerical modeling, the central line of the triplex sandwich beam is divided into a series of nodal points. Each node has two degrees of freedom (abbreviated "d.o.f"): a transverse displacement w and a rotation angle $\alpha$. All section forces, deformations, stresses and strains in the different layers of the laminate are expressed as a function of these two degrees of freedom. The numerical model will be used for the identification of the transverse shear modulus of the polymer layer based on measured resonance frequencies of a test beam. The resonance frequencies of a free-free suspended sandwich beam will be measured using an impulse excitation technique. The vibration amplitudes of the test beam are very small. This allows assuming a small deformation theory and linear material behavior in the numerical model of the sandwich beam. The tangents delta of the loss modulus can be identified with the measured damping ratio of the test beam, based on an analysis of the potential energy contributions of the different layers.