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Interactive comment on "Determination of Natural Frequencies and Mode Shapes of a Wind Turbine Rotor Blades using Timoshenko Beam Elements" *by* Evgueni Stanoev and Sudhanva Kusuma Chandrashekhara

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Thanks very much for your comments and remarks. My answers to your points:

1.The particular case for coinciding axis with the elastic centre is necessary to be included (and be developed to the final state) in order to apply the proposed numerical approach to a rotor blade model. The available rotor blade cross section data are with respect to principal elastic-centre axes. To apply the general case with arbitrary location of the beam reference axis, there will be needed all the stiffness values in the

matrix EA, see Eq.(8). Manufacturers of rotor blades do not release such data, same applies for shear stiffness Asy and Asz .

2. You are right, in this regular case the shear-torsion coupling terms are neglected by default. I will include a note after Eq. (9)-(10) to point it out explicitly.

3. It would be possible, but we are aiming to apply in an unified way the RK integration on an 1th order differential equation system from type eq.(38) – in order to achieve the regular form of the transfer matrix – see F(x,a)-matrix in eq.(40), with 12 state variables z1, z2. And, you are right, I change the "cutting" forces by "internal" or "section" forces at all places.

4. I will add all zero entries in Eq.(18).

5. I would change the notation of the Hermitian interpolation to 3th and 1th order. I mean the notation as e.g. 4th order interpolation points out that there are 4 unknown coefficients to be determined in a cubic polynomial.

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