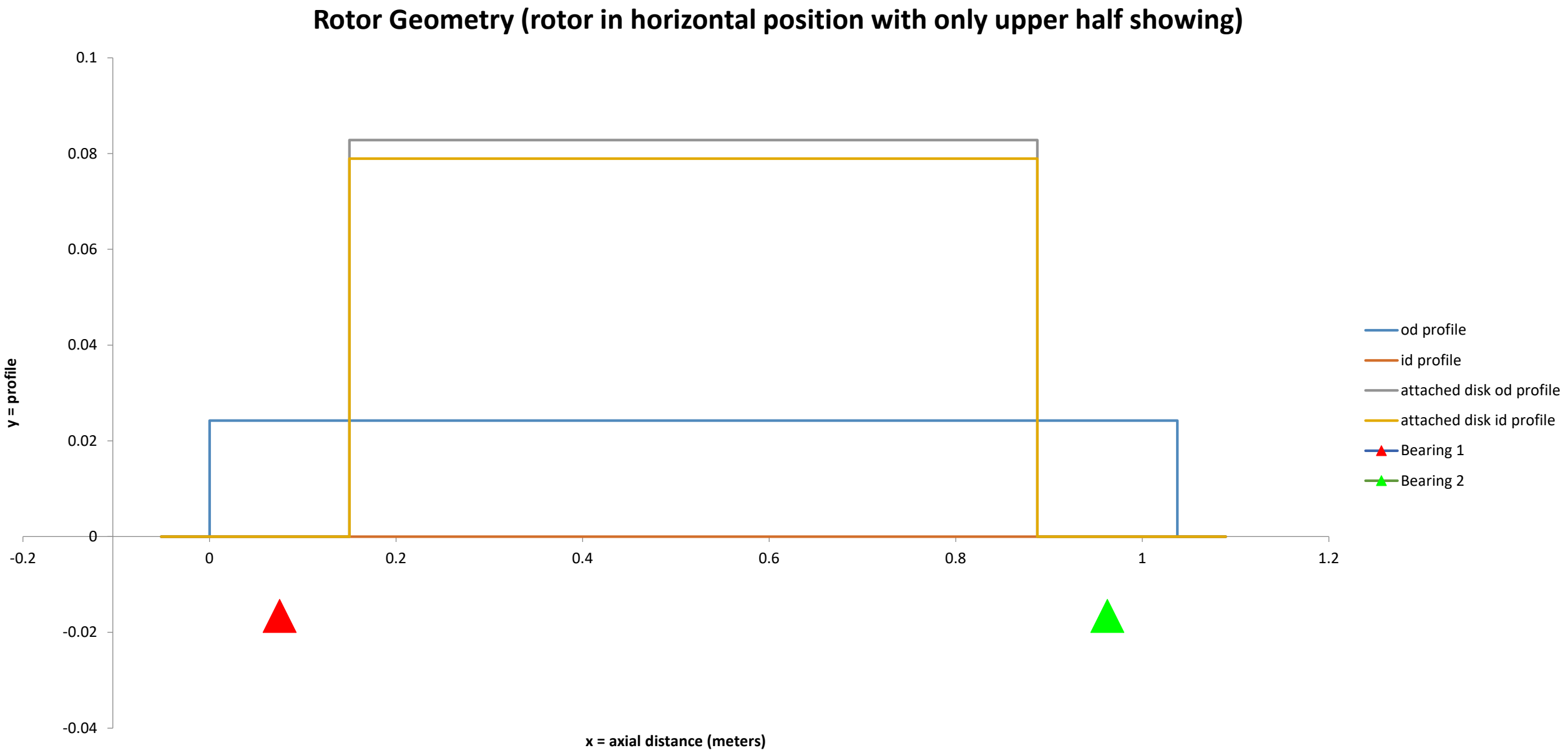
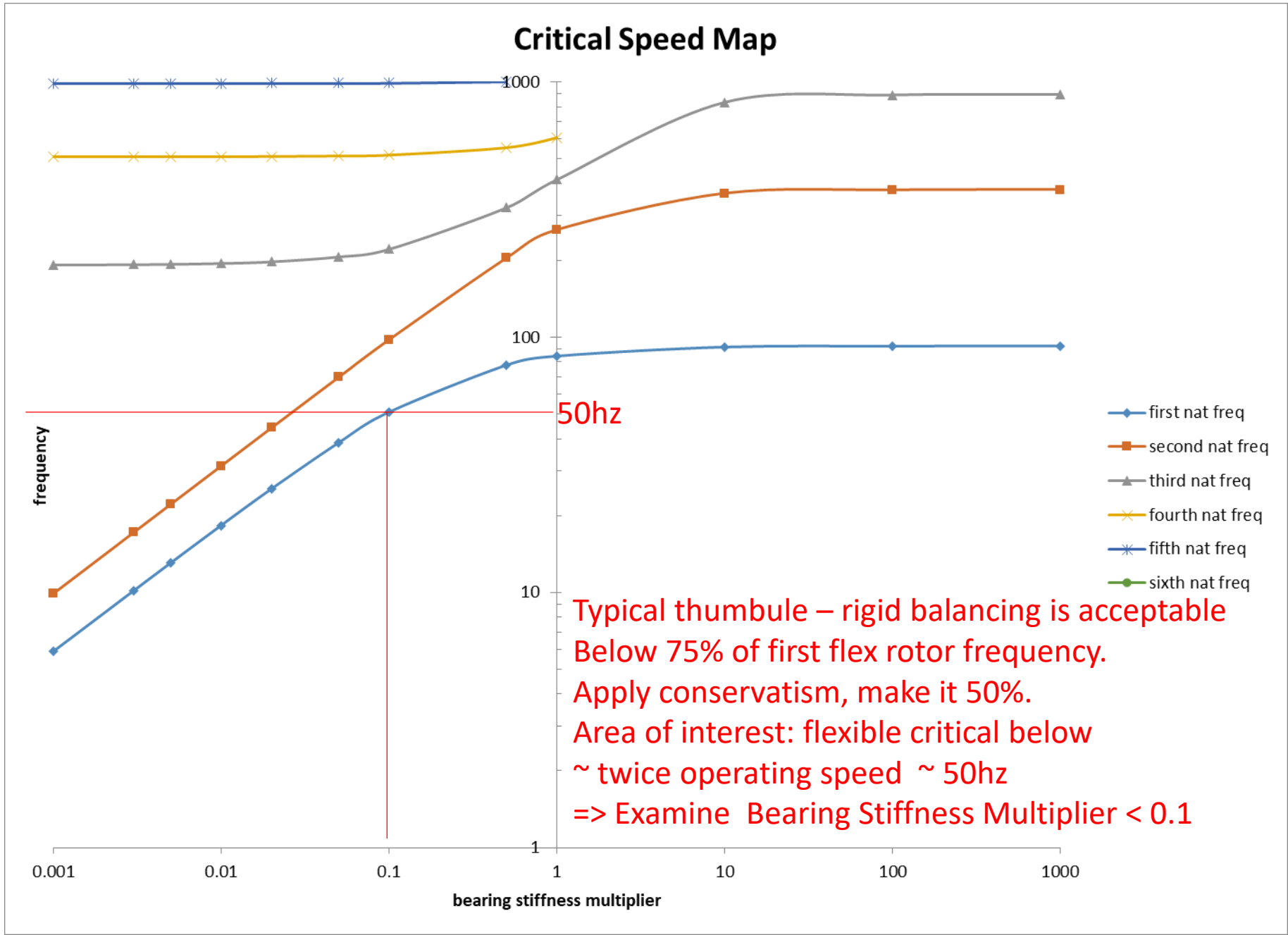
Rotor model (graphic)  SI Units



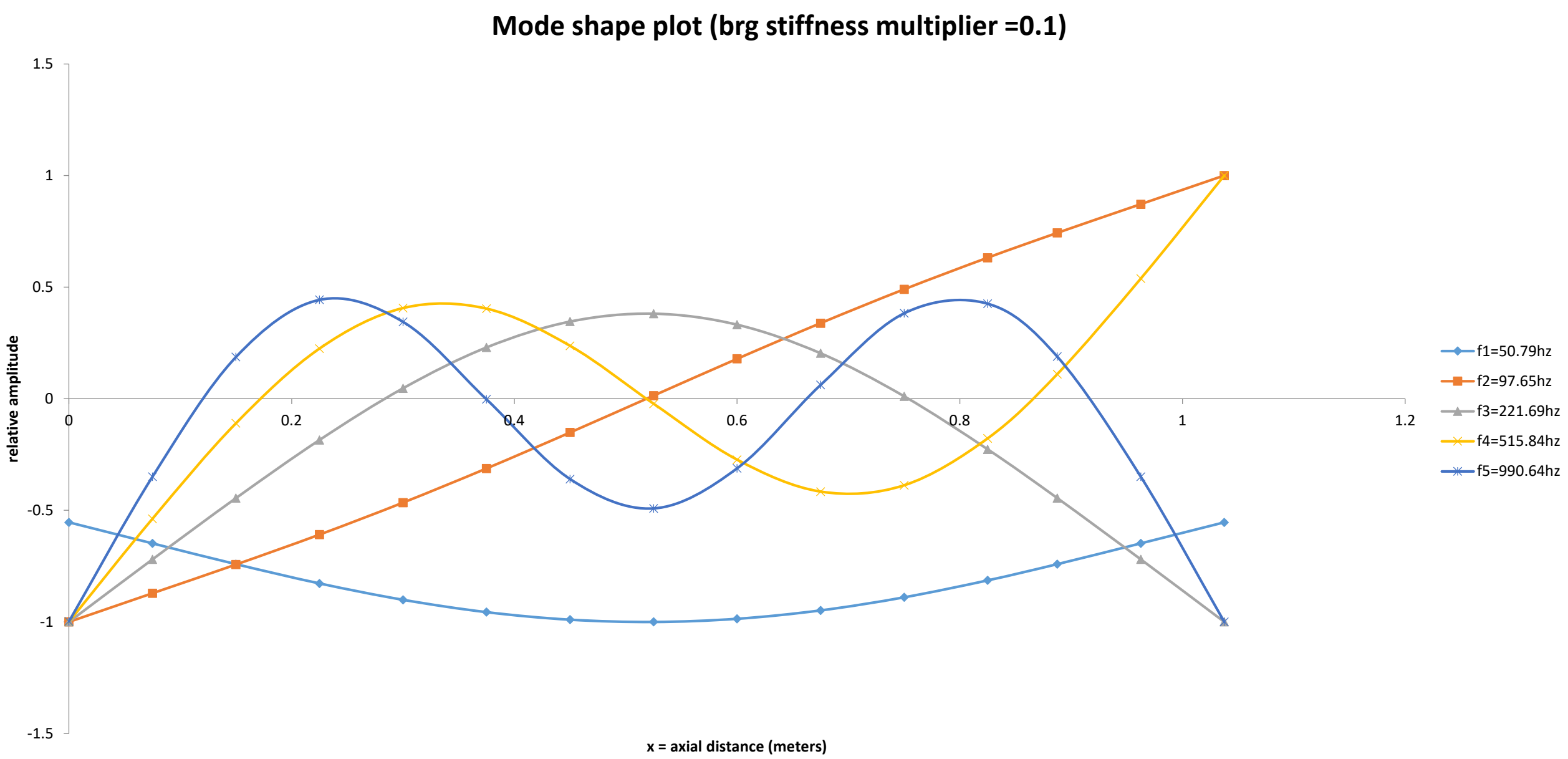
# Rotor Model (numerical) SI units

| Section Number | Section Length | Section ID | Section OD | Section E | Section Rho | Brg to left? | Brg Stiffness | AttachedDisk | DiskID | DiskOd | DiskRho |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | FALSE | | | |
| 2 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | TRUE | 1.78E+07 | FALSE | | | |
| 3 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 4 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 5 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 6 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 7 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 8 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 9 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 10 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 11 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 12 | 0.063 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | TRUE | 0.15784 | 0.16565 | 7750 |
| 13 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | FALSE | | FALSE | | | |
| 14 | 0.075 | 0 | 0.0484 | 2.30974E+11 | 7750 | TRUE | 1.78E+07 | FALSE | | | |

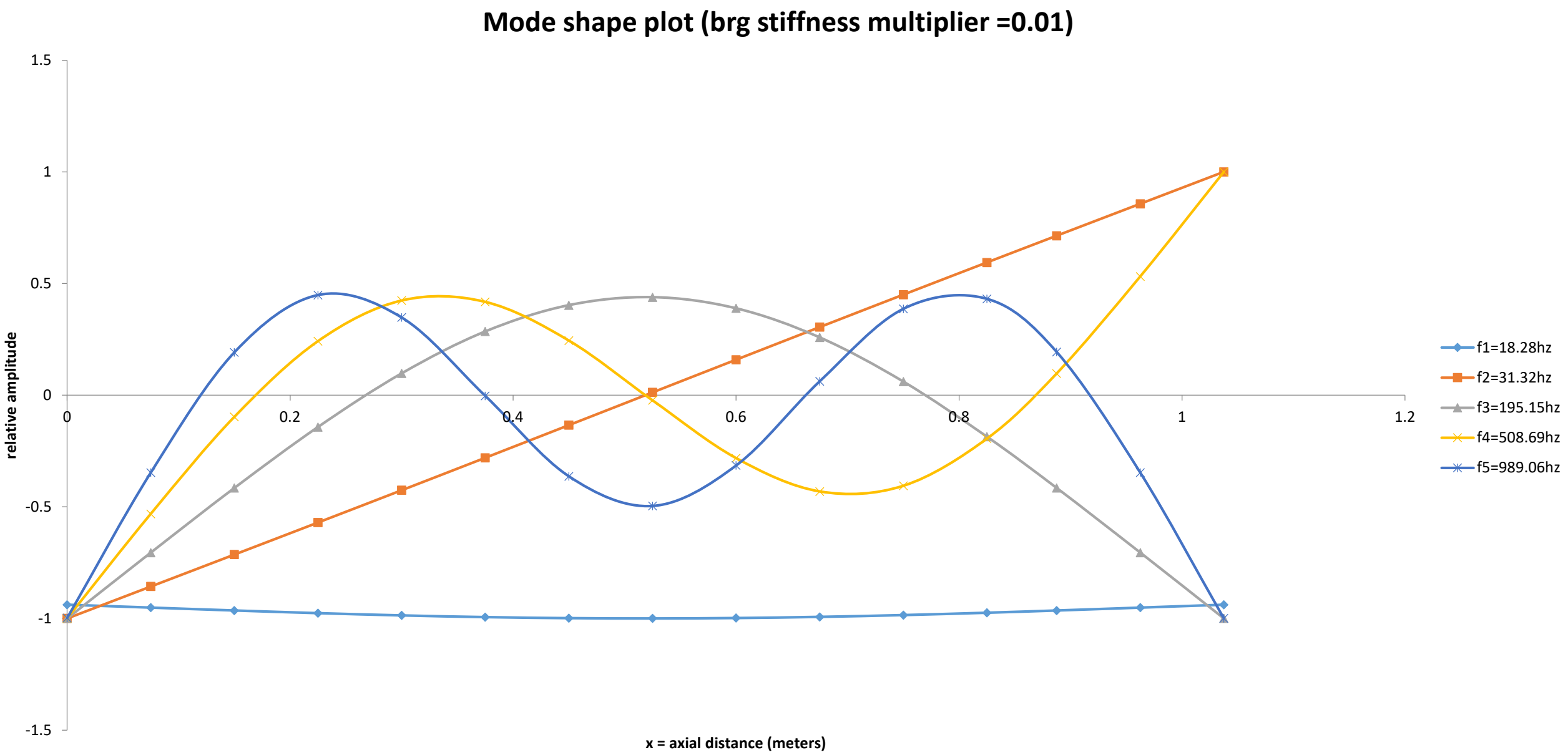
Result of calculation - Critical Speed Map (horizontal axis is bearing stiffness – treat as unknown).



Multiplier = 0.1.  Look at F1 mode (~51hz)  F1 is not particularly a flexible critical rotor (more motion in bearings than rotor).



Bearing stiffness multipler 0.01.  F1=18hz, similar to first mode of previous slide, but even less flexible.  F2 = 31HZ, not flexible.



Bearing stiffness multiplier of 1.  First resonant frequency is flexible rotor modeshape, however it is at 84hz.