Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assignment 4**

Consider the disk rigidity problem on page 1-4 of the lecture notes and the mass-displacement relationship given by dimension analysis

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where the latter form uses the first two odd order terms of Taylor expansion of *f* with respect to and, therefore, coefficients  and *b* may depend of  and . Instead of (expensive) physical experiments, one may use simulation by a model for finding, e.g., the dependency of the coefficients on  and . Use the mass-displacement table below, given by the course software with a large displacement plate model, to determine  and *b* when , , , , and . Also, use the outcome to estimate the values of the parameters for .

|  |  |  |
| --- | --- | --- |
| *m* [kg] | *u* [mm] () | *u* [mm] () |
| 0 | 0.00 | 0.00 |
| 1 | 1.26 | 0.94 |
| 2 | 2.34 | 1.81 |
| 3 | 3.21 | 2.59 |
| 4 | 3.94 | 3.28 |
| 5 | 4.56 | 3.89 |
| 6 | 5.10 | 4.44 |
| 7 | 5.58 | 4.93 |