Response to Gerard van Bussel

Title: *Pressure Based Lift Estimation and its Application to Feedforward Load Control employing Trailing Edge Flaps*

Dear Gerard van Bussel,

We thank you for accepting our paper and for your comment on Figure 4. We agree, that the scale and view in this plot was not too useful. We presented the plot this way, as we wanted to point onto the resonance peaks. In order to clarify the diagram, we changed the plot from greyscale to colour and we show the diagram in an isometric view now.

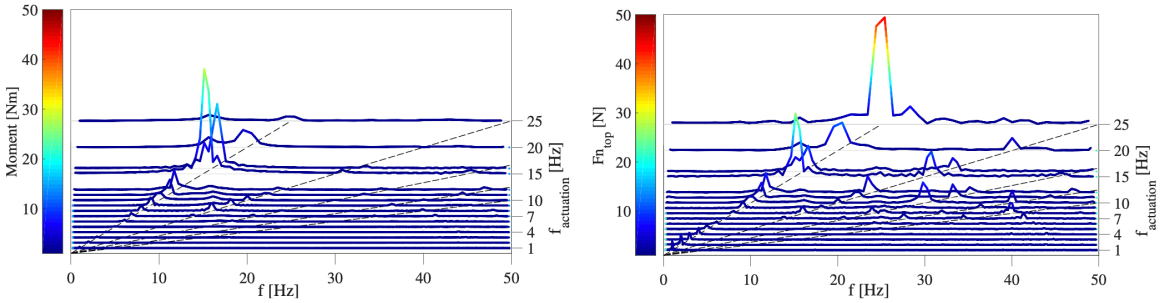

Figure 4. Waterfall diagram of the moment and normal force at different actuation frequencies for the trailing edge flap(y-axis). Experiment was conducted with the tunnel speed set to $u_\infty = 15\mathrm{m/s}$

Furthermore, we agree to your point that the diagram is very comparable to a Campbell diagram, but it strictly speaking isn't, as you point out. Nonetheless, we have added this point in accompanying paragraph as this might help to reader to understand the plot faster:

2.4 Frequency analysis of the test rig

The study presented in this paper is considered an aerodynamic and not an aeroelastic experiment. Therefore, the test-rig was analyzed for its structural eigenfrequencies. The excitation for this task was driven by the trailing edge flap. Multiple runs at various fixed frequencies were conducted and a time series of the force and torque balance were measured for each run. Each time series was Fourier transformed and the results were stacked, yielding a waterfall diagram (Fig. 4). The diagram is comparable to a Campbell diagram, whereas for the current test rig the flap motion is used for excitation and not a rotational frequency as done for rotating machines. In Fig. 4 the result for the measurement of the moment is shown on the left, the normal force is depicted on the right side. The y-axis depicts the set actuation frequencies and in the x axis corresponds to the Fourier transform of the signal. ~~The greyscale is representative for the amplitude.~~ Diagonal lines represent the actuation frequency and its multiples, with the left most line corresponding to the actuation frequency. As can be seen for the moment, there is a significant response at 16.6Hz, which is expected to be the torsional eigenfrequency of the test rig. This frequency appears also in the plot for the normal force. Additionally, a strong response can be seen at 24.8Hz which is expected to correspond to the normal eigenfrequency.

Thank you very much and kind regards,

Sirko Bartholomay