Tags: #logbook - Denison
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Logbook_07_220203

A Numeric Project

> ✏️ **Aims**   ⌄
>
> ☐ Examine quartic dispersion

A.1 Notes

We can create quartic dispersion by

```
% beta coeff for WS
beta2_WS = 21.4e-27;        % beta2 with opposite sign for Waveshap
beta3_WS = -0.12e-39;       % beta3 with opposite sign for Waveshap
beta4_WS = -80e-51;         % beta4 for quartic dispersion (s^4/m)
```

which cancels the dispersion of the SMF for β_2 and β_3, leaving only β_4 nonzero (and making it larger in magnitude).

A.2 Results

Using `quartic__220203__grid.m`:

```
03__quartic__202202031402__grid.fig
```

Peak wavelength shift (nm) after 250 trips
White = did not saturate
03__quartic__202202031402__grid
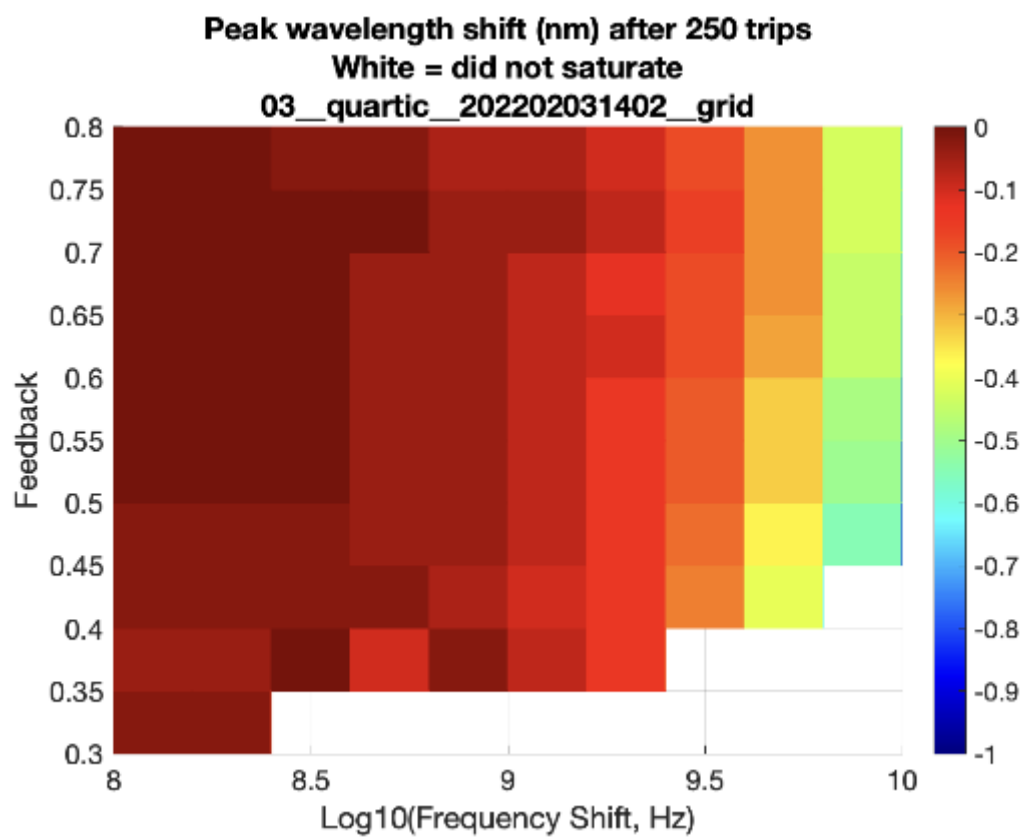
03__quartic__202202031402__grid.fig

A.3 Outcomes

- These results have been superseded by those in Logbook_08_220207

A.4 To Do

- ☑ Run and get a stable solution for the soliton, and then use that as the starting solution
  - So that we aren't hitting it while it is forming
- ☑ Create bifurcation plots:
  - x axis is a parameter, e.g. frequency shift
  - y axis is peak wavelength
  - Plot the peak wavelength after a certain number of roundtrips (e.g. $10, 20, 30$) in a vertical line for a given frequency shift
  - Then repeat for the next frequency shift
    - Hopefully the plots join up horizontally to make a line or a bifurcation