before trying that pinpoint-specific-noise, recall all parameters:

$\omega = 1.1\ Hz$

$\sigma = \sqrt{2\gamma}$

$\tilde{\sigma} = \sigma^2$

correct!

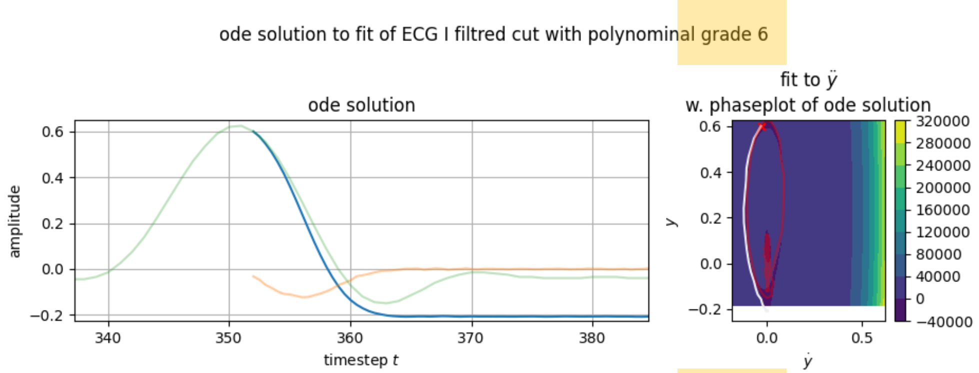
$N_f = ?$

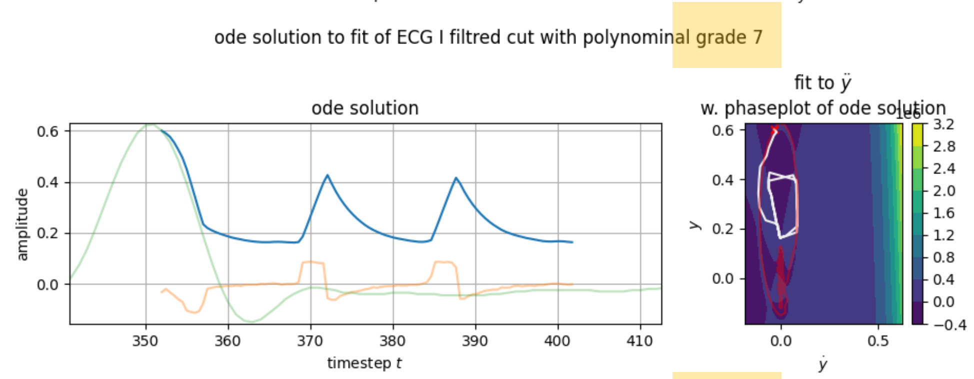
but this one?

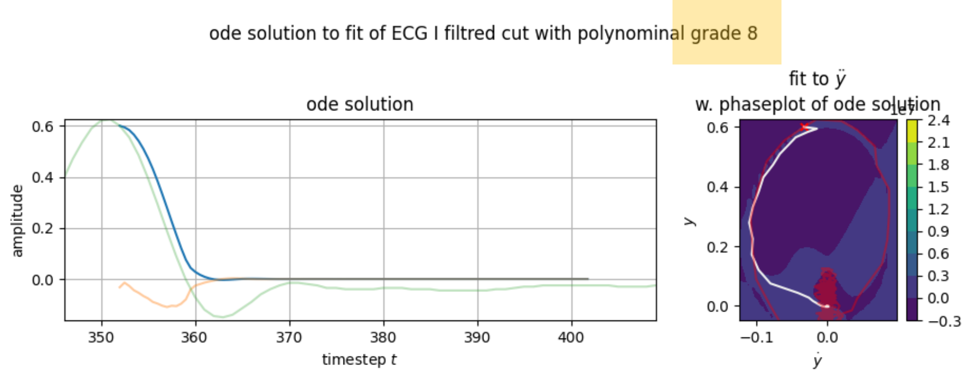
$$\dot{x} = v$$
$$\dot{v} = -\left(\omega_0^2 + \sigma\Gamma(t;\sigma^2)\right)x + f(x, v; \vec{p})$$

$$f(x, v; \vec{p}) = \underbrace{p_0 v + p_1 x^2 + p_2 xv + p_3 v^2 + \cdots}_{N_f}$$

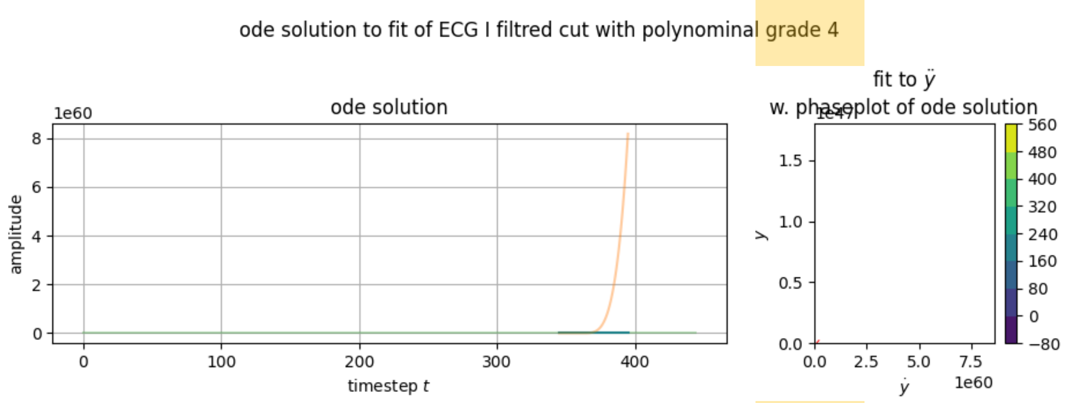
same parameters but different results:

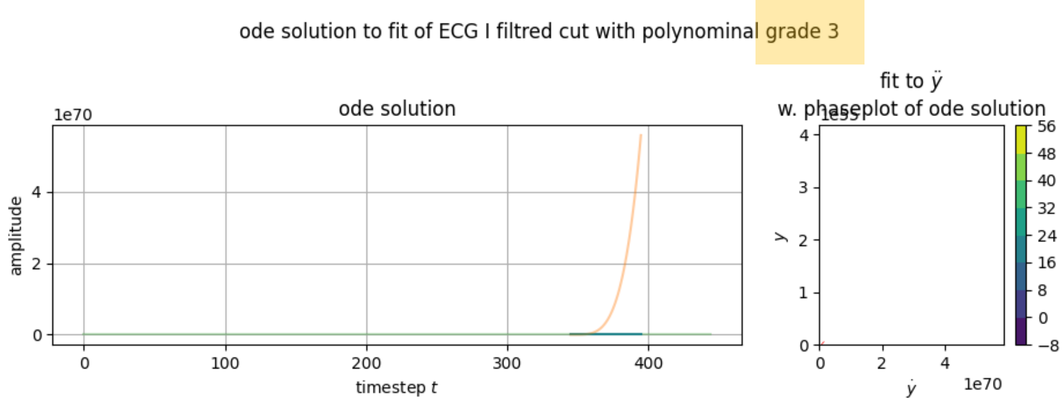






some N_f won‘t work.





for $N_f \leq 4$ the ODE solution would diverge.

looking at HO and VdP

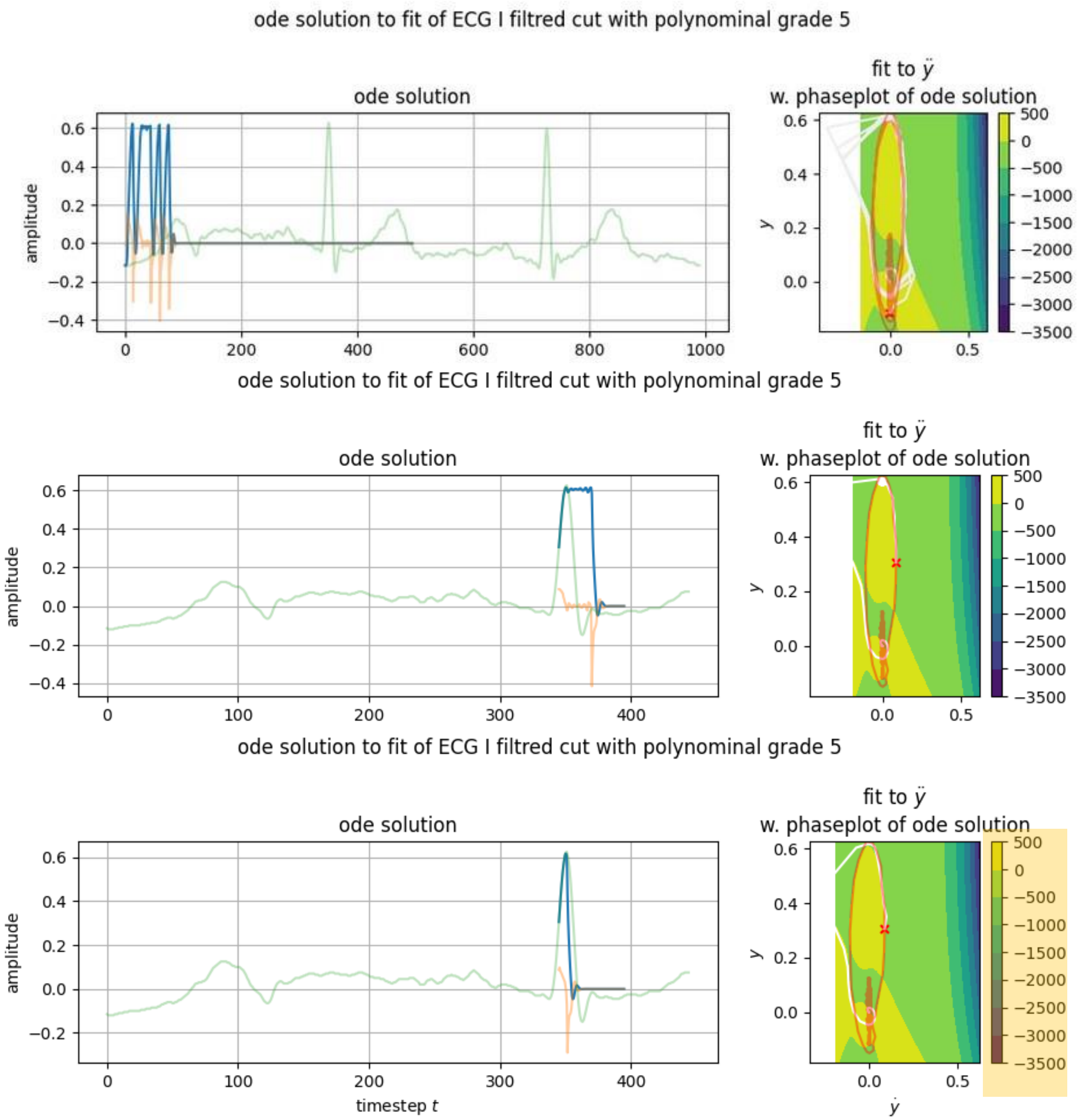
$$\dot{x} = v$$
$$\dot{v} = -x$$

➡ grade 2

$$\dot{x} = v$$
$$\dot{v} = \mu(1 - x^2)v - \omega^2 x$$

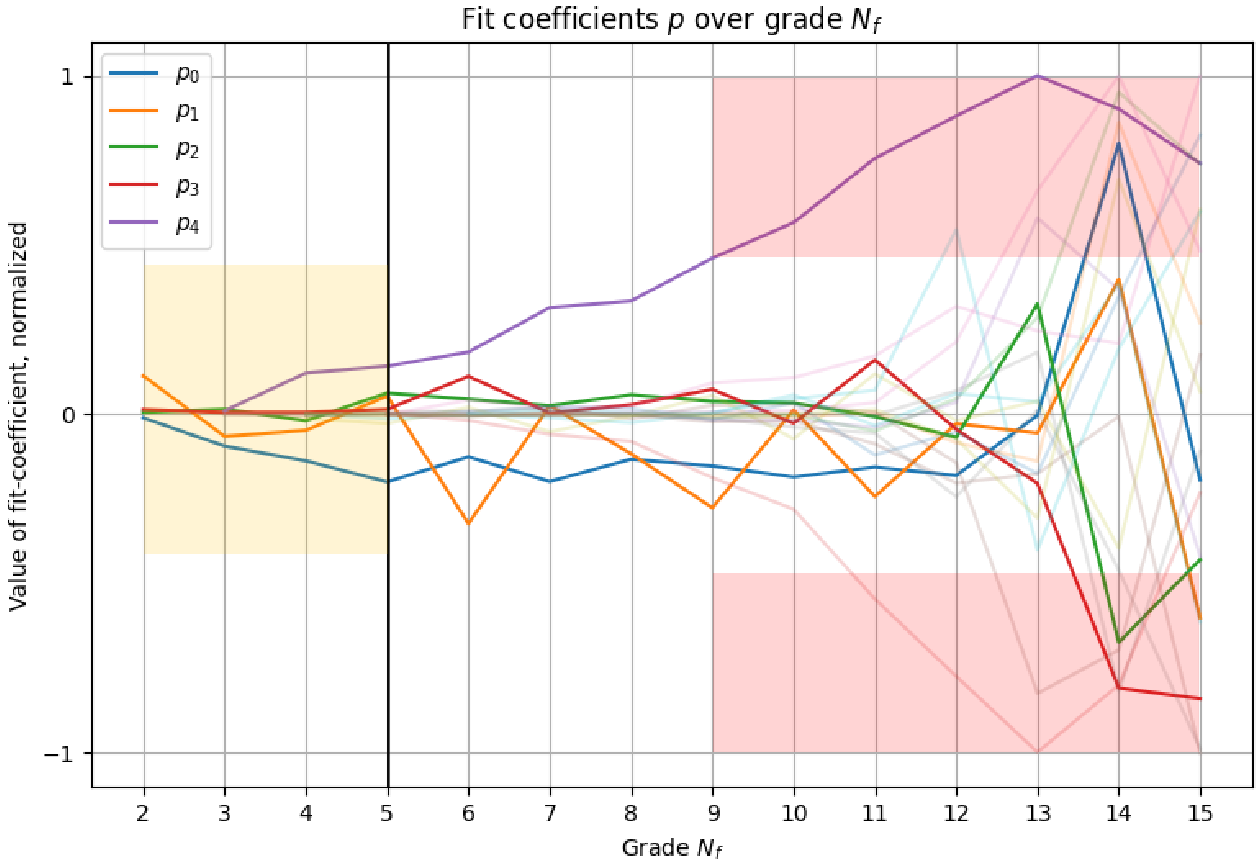
➡ grade 3

using grades 2, 3 the ODE solution would run into infinity for $N_f \geq 5$ it works:



lets view the fit-coefficients $\vec{p}$
and how they change with changing grade

$$f(x, v; \vec{p}) = p_0 v + p_1 x^2 + p_2 xv + p_3 v^2 + \cdots$$



they get really large

what grade?