1 Turning off the potentials and compare the linear and non-linear equations versus mathematica and quantify the error

2 Convergence tests, to see if by increasing precision in the Gevolution we get better results with respect to linear, which is a test of method too

3 Linear Gevolution comparisons with class results

The plots are : Linear δ and θ of kessence and δ of matter in Gevolution and class,
Two fields in class and linear Gevolution ζ and π,

4 Linear and non-linear comparisons with class results

The plots are : non-linear δ and θ of kessence and δ of matter in Gevolution and class,
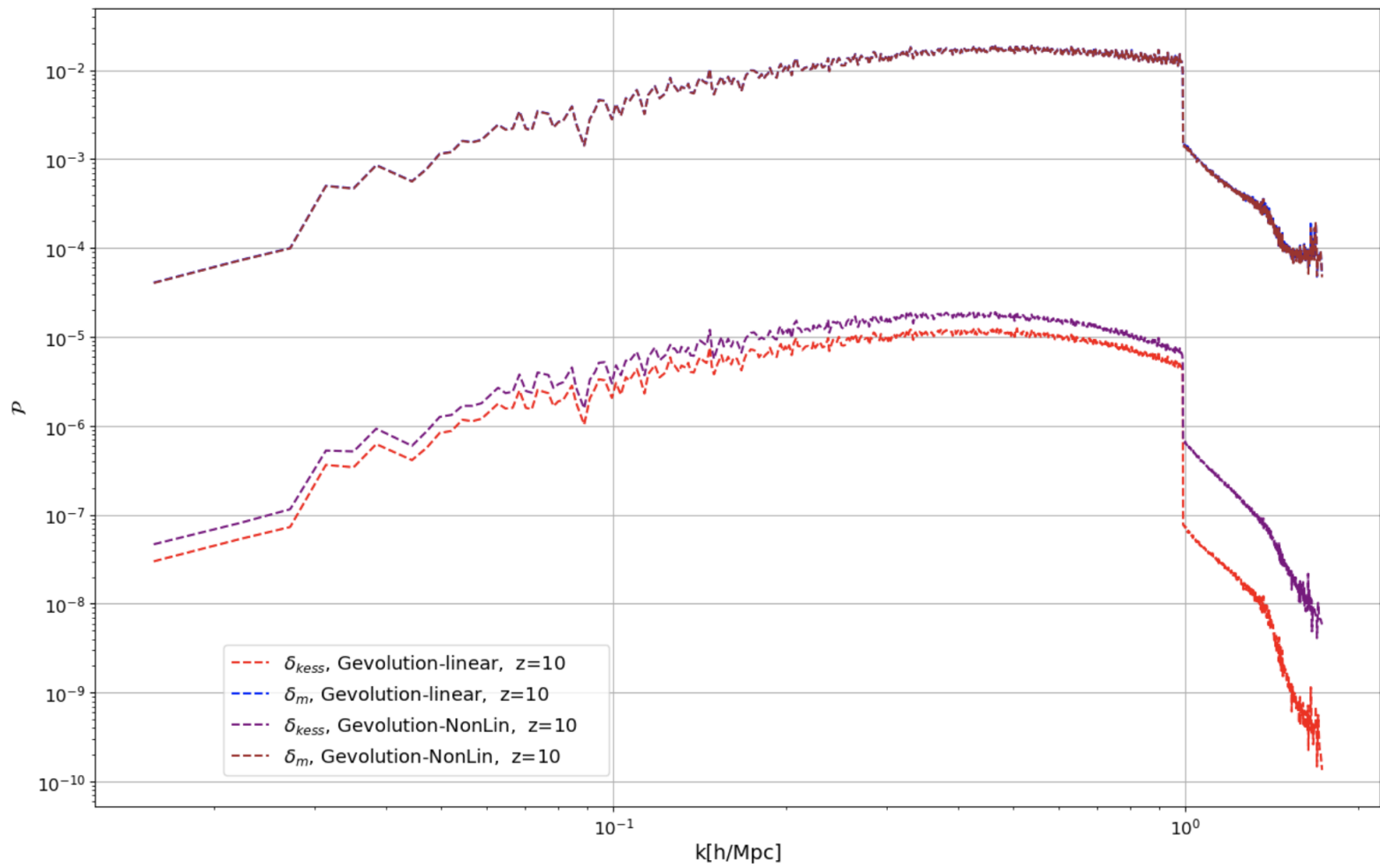Two fields in class and non-linear Gevolution ζ and π,
Here we want to compare non-linear results versus class for different variables, ζ, π and δ_{kess} to see what is the effect of non-linearities and does it make sense at all?
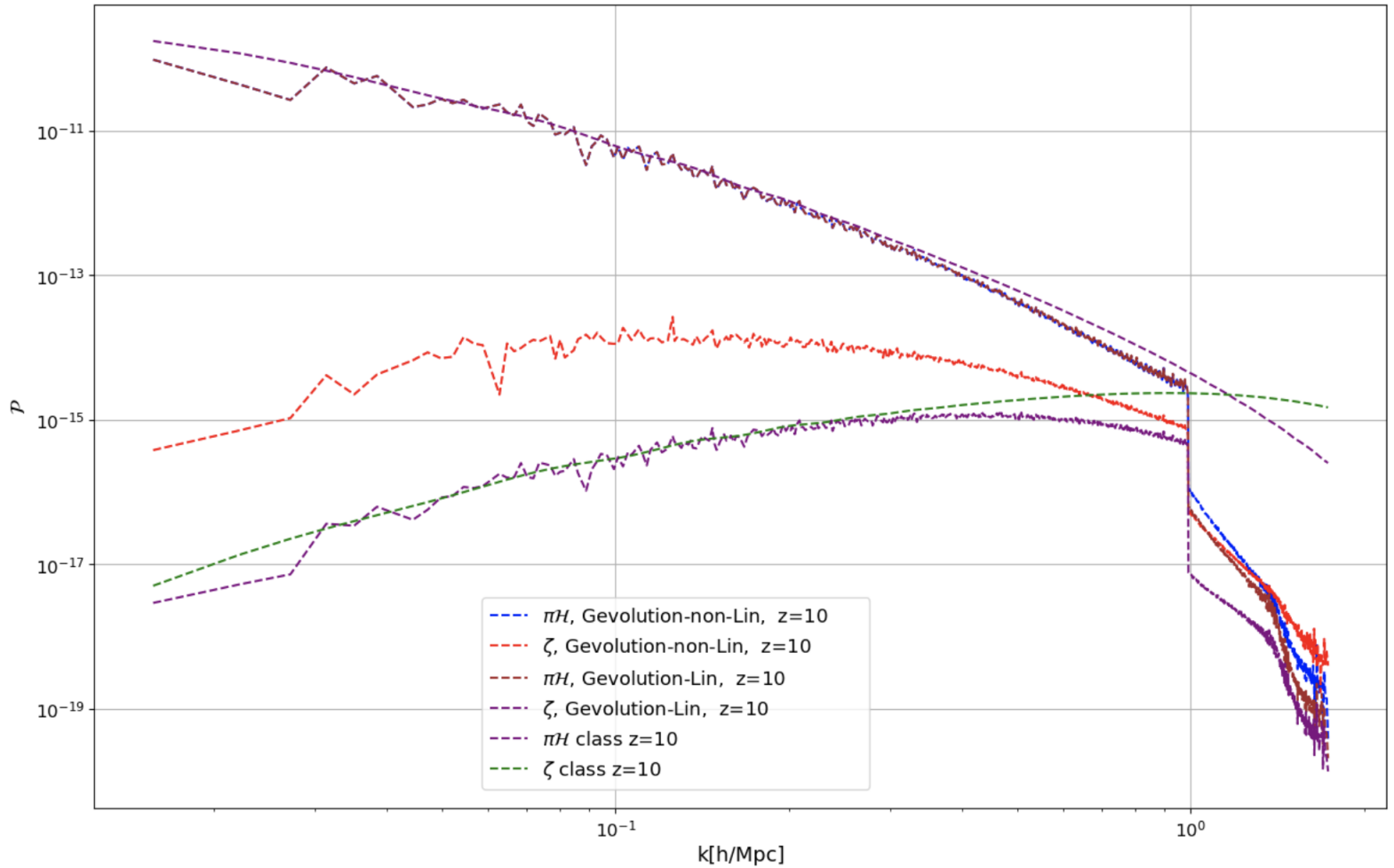We use the true initial condition for Gevolution which ζ values are not necessarily positive.
It seems that something is going wrong.
Not just because of the relative error which is not a good measure, instead we must take average or...
Specially because of the comparison with linear results as following, which shows that there is running for ζ_{kess} which after looking at the fields behaviour we see the following plot which makes very clear why the particles blow up at low redshifts and we get $\zeta = NAN$. The reason is that either the implementation is wrong or the equation has an instability. So we need to decrease time steps or some convergence tests to see if we can solve the issue.

But before trying to solve the non-linear issue, lets look at the integer we have recently added which switches between linear and non-linear and see if we can recover linear spectra with turning on just linear part.

5   Sensitivity to initial conditions

What would be error if we set the initial condition at z=100 to zero?

6   The effect of non linearities on gravitational potential at some different redshifts Ψ and matter power spectrum

7   Solve the solution to non-linear terms in mathematica with Gevolution

Just if we get bad results, try to solve the terms separately...

8 Measuring the average of field in Gevolution to see the backreacktion

9 Sensitivity to initial conditions

What would be error if we set the initial condition at z=100 to zero?

10 The effect of non linearities on gravitational potential at some different redshifts Ψ and matter power spectrum

11 Trace the average of the perturbation to be consistent

Lorenzo function

12 Vector elliptic and vector parabolic consistency check

Turn on the other equations, vector parabolic and see if we get the same results