

How to Start KUPDAP

- Click kupdap.exe
- You don't have to install it.
- I've tried Windows machines. KUPDAP works well on most machines but it is hang on some machines.

Load and Save parameters.

- You can load a parameter file by clicking the “LOAD” button and choosing the file.
- Note if the path contains Japanese, KUPDAP may fail in loading parameters.
- You can save parameters by clicking “STORE” button.

Parameters

KUPDAP: test.prm

GENERAL

cv speed of light wc Cyclotron frequency of the FIRST particle theta propagation angle (deg)

PARTICLE

name	you can name particles	species	select species
q	charge	q/m	charge over mass
wpd	+ plasma frequency – density relative to the FIRST particle	drift	drift speed
v_perp	perpendicular thermal velocity	v_para	parallel thermal velocity
loss0	0: Maxwellian 1: loss-cone (bfac and ppp are meaningless if this value is set to 0)	bfac	beta
		ppp	rho

RANGE

frmin	0.000000e+00	fmax	1.000000e+00	nfr	40
fimin	-1.000000e-01	fimax	1.000000e-01	nfi	5
kmin	0.000000e+00	kmax	2.000000e+00	nk	10

Load Store Calculate

Range of
calculation
and the
number initial
solutions

Example of converting parameters

We have cold electron, cold proton and hot proton. Given parameters are

$$B_0 = 140 \text{ nT}$$

$$n(\text{Hc}^+) = 10 \text{ cm}^{-3}$$

$$n(\text{Hh}^+)/n(\text{Hc}^+) = 0.05$$

$$(kT_{\parallel}/2)c = 1.5 \text{ eV}$$

$$(kT_{\parallel}/2)h = 15 \text{ keV}$$

$$(T_{\perp}/T_{\parallel})h = 2$$

parallel propagation.

We set hot proton as the FIRST particle.

and $cv = 300$, $wc = 1$, $\theta = 0$.

For the first particle, we set $q = 1$ and $q/m = 1$.

Proton gyro frequency is 2.1 Hz and plasma

frequency is 664. Thus $wpd = fpH/fgH*wc = 316$

Proton thermal velocity is 311000 m/s thus

$$v_{\perp}(\text{Hc}^+) = v_{\parallel}(\text{Hc}^+) =$$

$$311000/300000000*cv = 0.311$$

For the hot proton, $q = 1$ and $q/m = 1$.

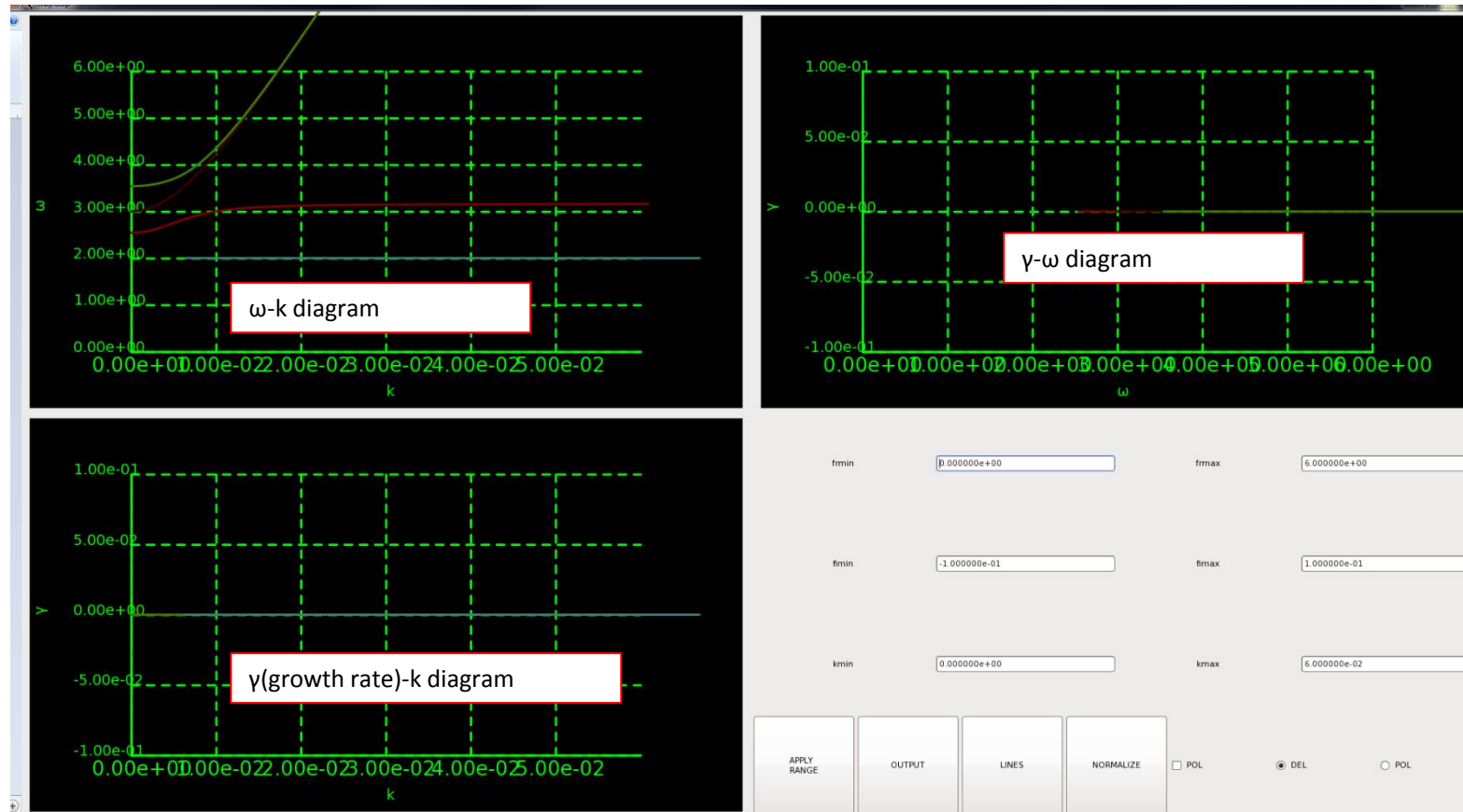
wpd is determined by the relative density Thus

$$wpd = -0.05.$$

For electrons, $q = -1$ and $q/m = -1836$.

$$wpd = -1.05.$$

Result



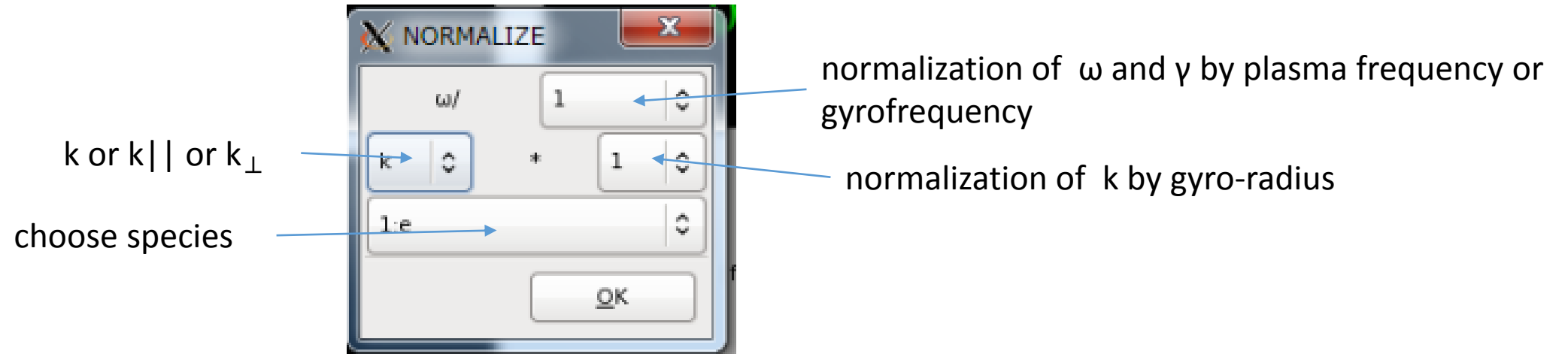
If you want to change the range, edit these values and push “APPLY RANGE”

Hiding lines

- By clicking around a line, you can hiding the line.
- If you push “LINES”, a small window appears. It shows you which line is displayed or not. By toggling the check box, you can show and hide the line

Normalization

By clicking “NORMALIZE”, a window below appears.



OUTPUT

- By clicking “OUTPUT”, you can determine the file name for output.
- The order of data is k , ω and γ
- If the data contains several lines, they are delimited by an empty line.