

calcQTN



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CalcQTN does:

- Calculate the quasi-thermal noise of a dipole in the solar wind:
 - Electrons = kappa distribution,
 - Doppler_shifted Proton noise,
- preview the obtained spectra

CalcQTN doesn't:

- Fit data

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The screenshot displays the calcQTN software interface with four main sections highlighted by colored boxes:

- Premade configurations:** A list box containing "Demonstration", "Ulysses/URAP", "Wind/WAVES", "STEREO/WAVES", and "RESET".
- Antenna parameters:** Four spinners with values: antenna length (10.00 m), impact factor (1.00 mm), base capacity (50.00 pF), and potential (5.00 V).
- Frequencies:** A section with a "Create?" button, a text area for "Frequencies list (in Hz)", and a "Clear" button.
- Plasma parameters:** Six spinners with values: electron density (5.000 x10⁶ m⁻³), electron temperature (1.00 x10⁵ K), kappa index (3.00), proton temperature (1.00 x10⁵ K), Bulk velocity (6.00 x10⁵ m/s), and Speed - antenna angle (90.00 °).

At the bottom, there is an "Output file name:" field with "untitled.txt", a "Browse..." button, and three buttons: "Run", "Show", and "Plot".

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Receiver frequencies:

Number of frequencies

Select how to get frequencies

- manually given by user
- linear evenly spaced
- log-scale evenly spaced

lowest frequency (in Hz):

highest frequency (in Hz):

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/home/glechat/publication/thmr290116/calcQTN/WindSW.txt

```
#+
#Solar wind quasi-thermal noise power spectra compute from kappa_qtn()
#calculation details can be found in Le Chat et al., Physics of Plasma, 16(10) : 102903, 2009
#available at http://www.glechat.fr/publications/LeChatPoP2009.pdf
#Input parameters are:
#density = 8e+06 /m^3
#electron temperature = 150000 K
#kappa = 3.1
#proton temperature = 130000 K
#solar wind bulk velocity = 750000 m/s
#antenna-speed angle = 90 degrees
```

OK

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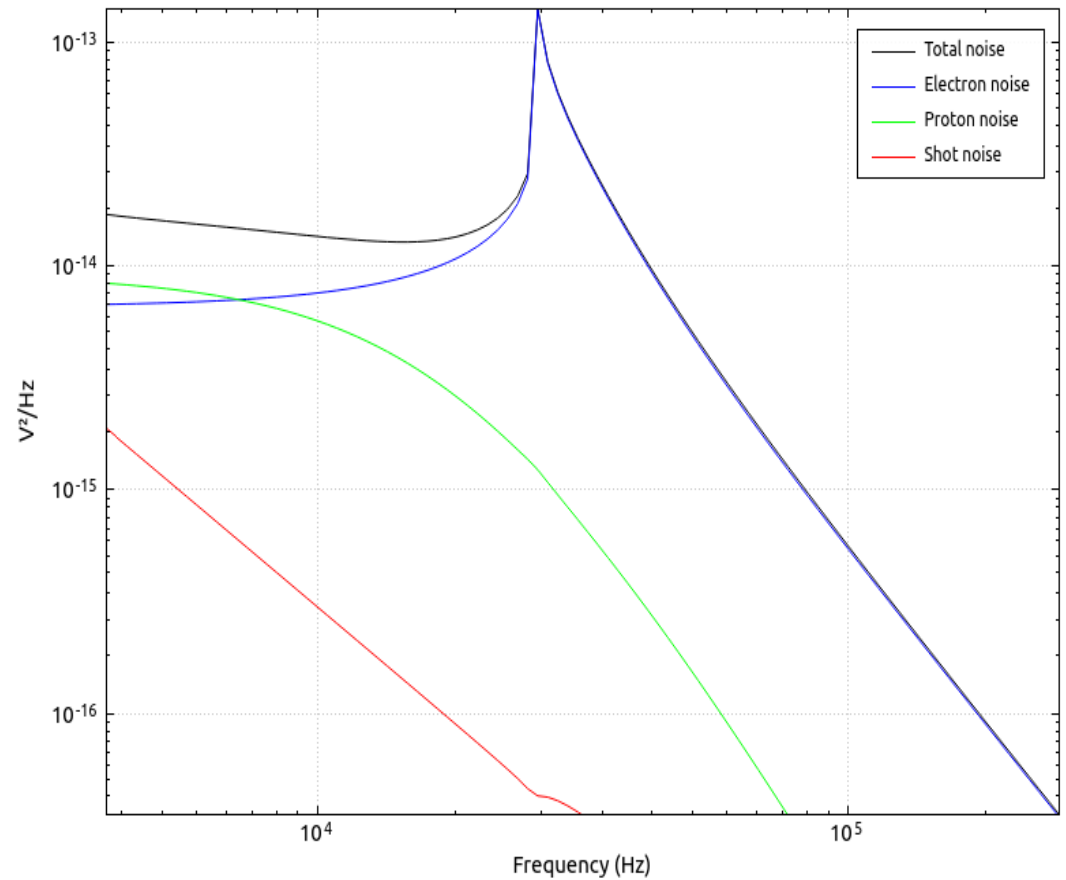
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Parameters

density = $8e+06$ /m³
electron temperature = 150000 K
kappa = 3.1
proton temperature = 130000 K
solar wind bulk velocity = 750000 m/s
antenna-speed angle = 90 degrees
antenna length = 50 m
antenna impact factor = 0.00038
base capacity = $4e-11$ F
s/c potential = 5 V

QTN Power Spectrum



Rescale

Save

Close