Exercise: Analysing S3K output

In this exercise, we will look at relation between the total thermal power and the power to coolant.

We will analyze the results stored by S3K on the file r1\_cy14\_09\_glbl.cms. First inspect the total power and the power to coolant with PlotS3k. Then we will try to fit a transfer function from Qt to Qc.

First, run the script QtQc.m (on MatlabClass/S3kMatstab/Harmonics)

We would anticipate the transfer function to be something like this:

**K**

**1+sT**

**Qt**

**Qc**

With K=1 and T=3.

Also, when Qt  is close to sinusoidal with frequency rad/s or even more accurately, the *complex frequency* is , we would anticipate the *phasor* correponding *to* Qc to be 

In the last equality,we have assumed that QT is normalized to unity.

Inspect the result for QC display in the ‘compass’ generated by QtQc (in its call to simf). Why is it different?

Hint: Look at slide 3 Reactor Heat Sources in this mornings’ lecture on Reactor dynamics.

Modify the script simf to take into account your ‘Liljeholmen’ above!

Use the function fitQcQt and fminsearch to find good numbers on T and γ.