Program Plots 1

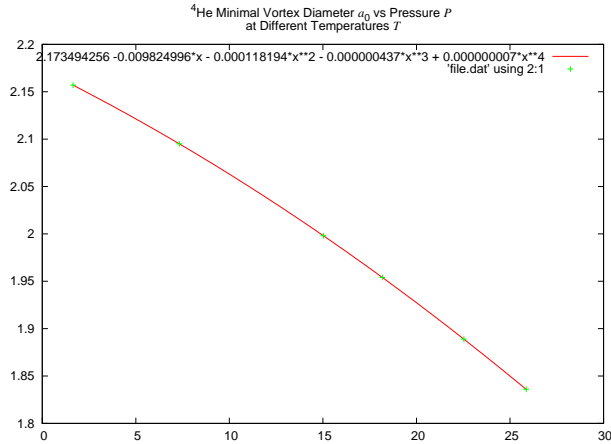Andrew Forrester   February 12, 2010

Contents

1 Files

- PostScript (.ps)

  - `plot_a0VsTP.ps`
  - `plot_HeatCapVsTemp_DK0050.ps`
  - `plot_HeatCapVsTemp.ps`
  - `plot_HeatCapVsTempV_b.ps`
  - `plot_HeatCapVsTempV_DK0030.ps`
  - `plot_HeatCapVsTempV_DK0040.ps`
  - `plot_HeatCapVsTempV_DK0050.ps`
  - `plot_HeatCapVsTempV_DK0060.ps`
  - `plot_HeatCapVsTempV_DK0070.ps`
  - `plot_HeatCapVsTempV_DK0080.ps`
  - `plot_HeatCapVsTempV_DK0090.ps`
  - `plot_HeatCapVsTempV_DK0100.ps`
  - `plot_HeatCapVsTempV_DK0110.ps`
  - `plot_HeatCapVsTempV_DK0120.ps`
  - `plot_HeatCapVsTempV_DK0130.ps`
  - `plot_HeatCapVsTempV_DK0140.ps`
  - `plot_HeatCapVsTempV.ps`
  - `plot_HeatCapVsTvPress.ps`
  - `plot.ps`
  - `plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv_log_AhlersCompare_adjust.ps`
  - `plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv_log_AhlersCompare.ps`
  - `plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv_log.ps`
  - `plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv.ps`
  - `plot_vlt_ThermStates_Dexp100_A_RhosoRhoVsTvNu.ps`
  - `splot_a0VsTP.ps`

- Portable Network Graphics (.png)

  - `plot_2D_KrK0versusl_B_linlin.png`
  - `plot_2D_KrK0versusT_B_linlin.png`
  - `plot_2D_KrversusT_A_linlin.png`
  - `plot_2D_KrversusT_B_linlin.png`
  - `plot_2D_Kversusl_A_loglin.png`
  - `plot_2D_Kversusl_B_linlin.png`
  - `plot_2D_yversusl_B_loglin.png`
  - `plot_2D_yversusT_B_loglin.png`
  - `plot_3D_Fversusl_B_linlin.png`
  - `plot_3D_FversusT_B_linlin.png`
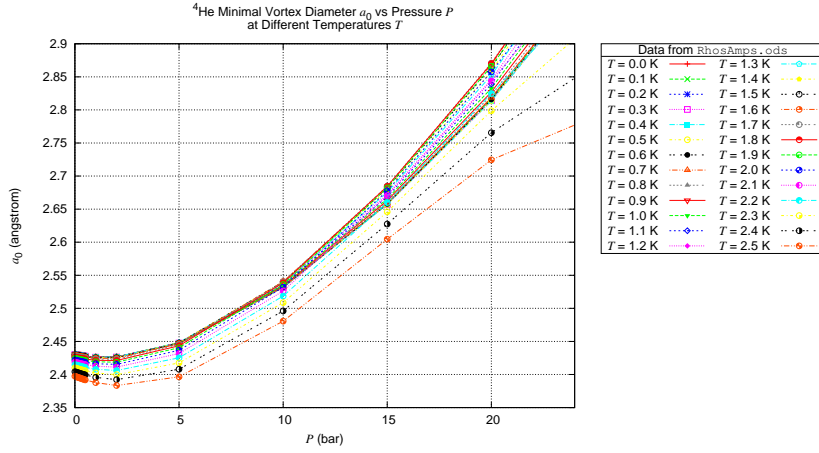 - `plot_3D_KrK0versusl_A_loglog.png`

2   Data Fit

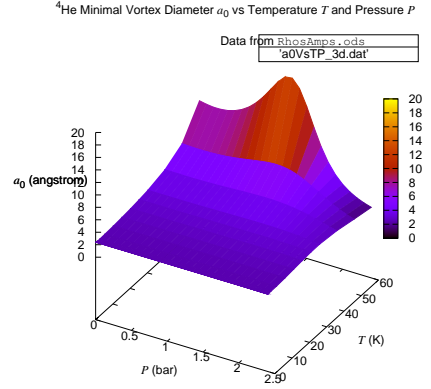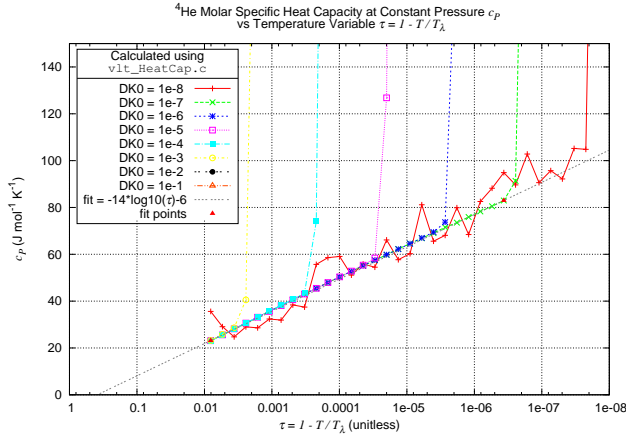This is actually Tc versus P:

plot.pdf

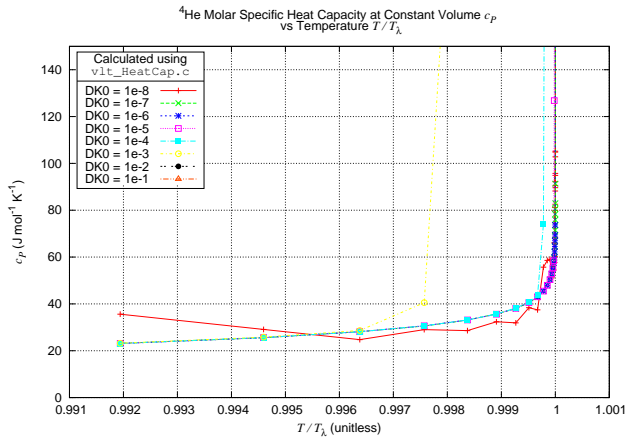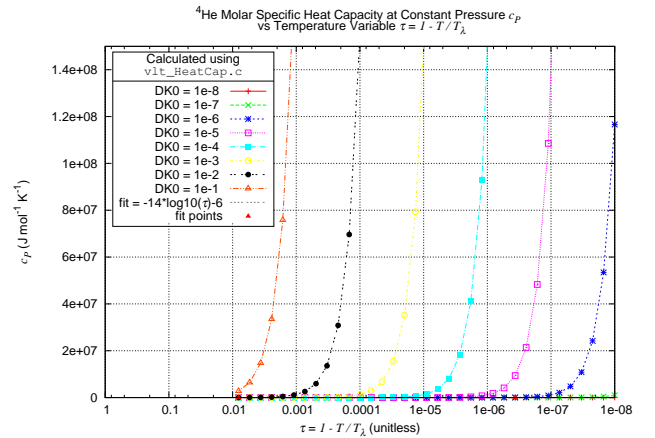# 3   Plots before Correction of K0cFind Program

plot_a0VsTP.pdf

splot_a0VsTP.pdf

plot_HeatCapVsTempV.pdf
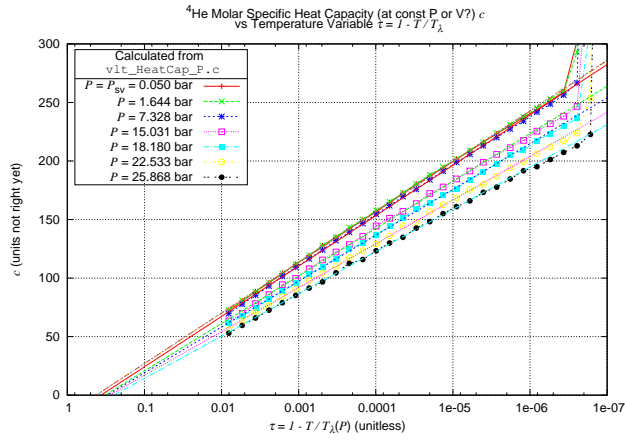

plot_HeatCapVsTemp.pdf

plot_HeatCapVsTempV_b.pdf

The following files are redundant with the three above plots and so are not included (but can be shown if uncommented in `ProgramPlots1.tex` file):

- `plot_HeatCapVsTempV_DK0030.ps`
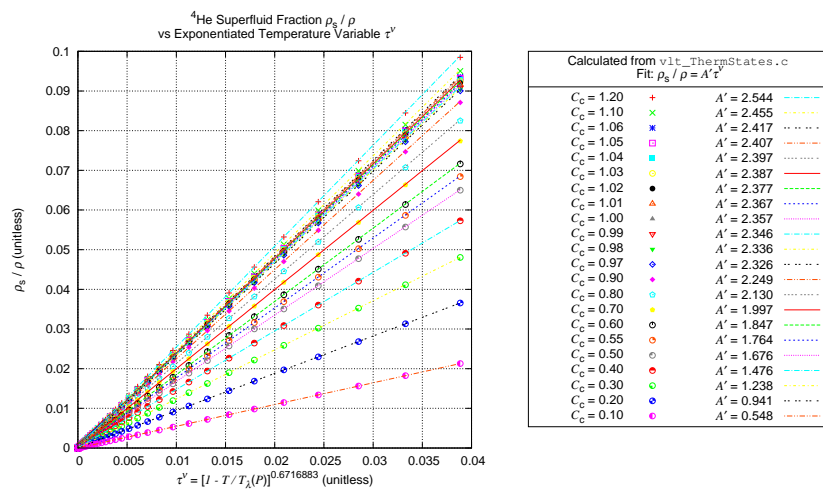- `plot_HeatCapVsTempV_DK0040.ps`

- `plot_HeatCapVsTempV_DK0050.ps`

- `plot_HeatCapVsTemp_DK0050.ps`

- `plot_HeatCapVsTempV_DK0060.ps`

- `plot_HeatCapVsTempV_DK0070.ps`

- `plot_HeatCapVsTempV_DK0080.ps`

- `plot_HeatCapVsTempV_DK0090.ps`

- `plot_HeatCapVsTempV_DK0100.ps`

- `plot_HeatCapVsTempV_DK0110.ps`

- `plot_HeatCapVsTempV_DK0120.ps`

- `plot_HeatCapVsTempV_DK0130.ps`

- `plot_HeatCapVsTempV_DK0140.ps`

- `plot_HeatCapVsTvPress.ps`

`plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv_log_`
`AhlersCompare_adjust.pdf`

The following files are incorrect and so are not included (but can be shown if uncommented in `ProgramPlots1.tex` file):

- `plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv_log_AhlersCompare.ps`

- `plot_vlt_HeatCap_P_DK0_1e-07_CapVsTv_log.ps`

^{4}He Superfluid Fraction ρ_s / ρ
vs Exponentiated Temperature Variable τ^ν

Calculated from vlt_ThermStates.c			
Fit: $\rho_s / \rho = A' \tau^\nu$			
$C_c = 1.20$	+	$A' = 2.544$	
$C_c = 1.10$	×	$A' = 2.455$	
$C_c = 1.06$	✳	$A' = 2.417$	
$C_c = 1.05$	▣	$A' = 2.407$	
$C_c = 1.04$	◼	$A' = 2.397$	
$C_c = 1.03$	◇	$A' = 2.387$	
$C_c = 1.02$	●	$A' = 2.377$	
$C_c = 1.01$	△	$A' = 2.367$	
$C_c = 1.00$	▲	$A' = 2.357$	
$C_c = 0.99$	▽	$A' = 2.346$	
$C_c = 0.98$	▼	$A' = 2.336$	
$C_c = 0.97$	◈	$A' = 2.326$	
$C_c = 0.90$	✦	$A' = 2.249$	
$C_c = 0.80$	⬠	$A' = 2.130$	
$C_c = 0.70$		$A' = 1.997$	
$C_c = 0.60$	◉	$A' = 1.847$	
$C_c = 0.55$	◍	$A' = 1.764$	
$C_c = 0.50$	◍	$A' = 1.676$	
$C_c = 0.40$	◍	$A' = 1.476$	
$C_c = 0.30$	⬡	$A' = 1.238$	
$C_c = 0.20$	⬡	$A' = 0.941$	
$C_c = 0.10$	⬡	$A' = 0.548$	

plot_vlt_ThermStates_Dexp100_A_RhosoRhoVsTvNu.pdf

4 Adjusted Theory

These plots use data from `ring3.c`, `derk1.c`, and `Donnelly_rhos.dat`. Option `beta` in `ring3.c` was created using data points placed in `funkyfactorfit.dat` designed to make a smooth transition in the plot of `plot_ring3_Delok_beta.png` from about 8.68 K to 6.8 K. (See `HeliumDensities.ods` in the `supporting` folder for calculations and plots of "Del/kB 3".)
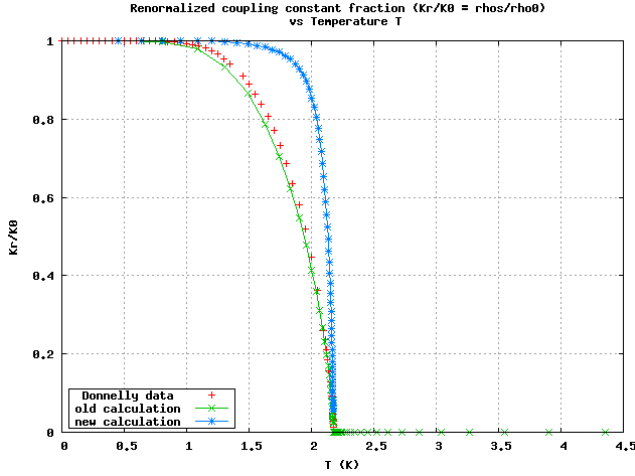
plot_rhos_compare_alpha.png
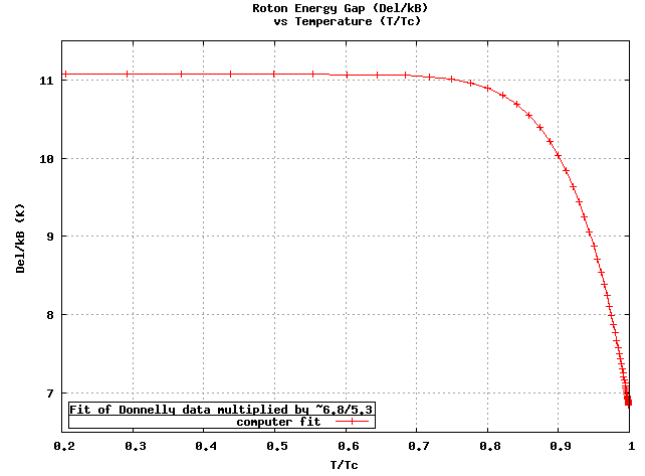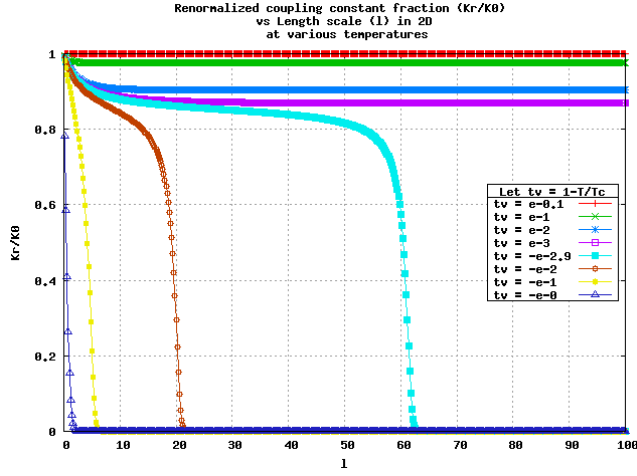

plot_ring3_Delok_alpha.png
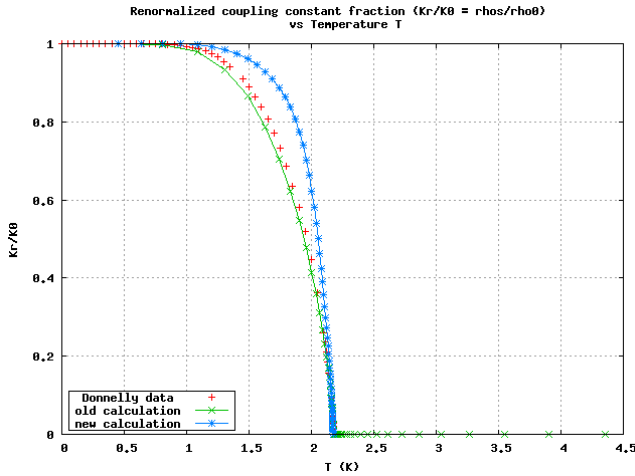
plot_rhos_compare_beta.png
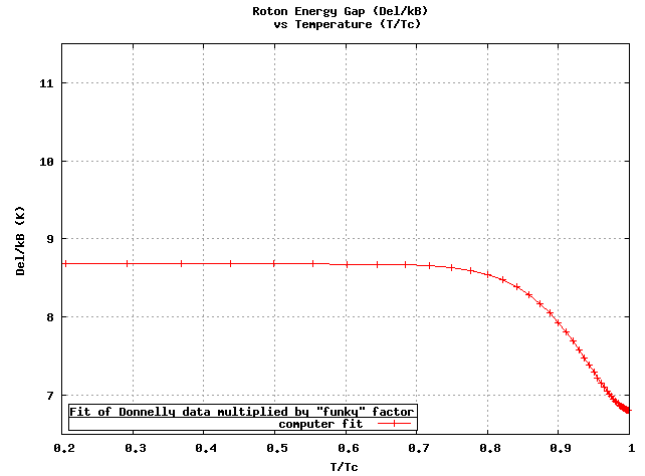
plot_ring3_Delok_beta.png

5 Initial Theory

5.1 2D Program Plots

These plots use data from 2DKT.c and `derk1.c`.
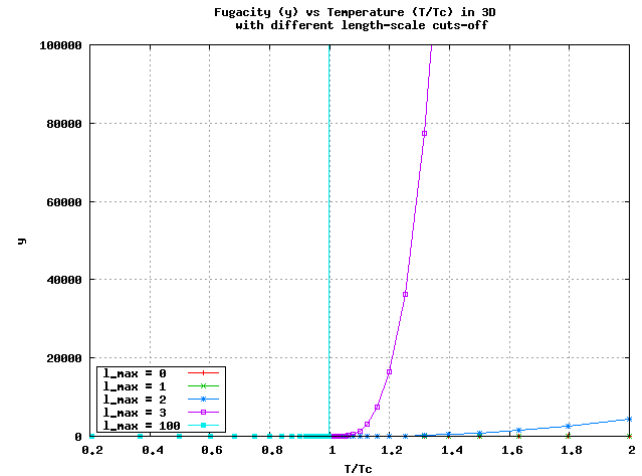
5.1.1 Major Plots

plot_2D_KrK0versusl_B_linlin.png
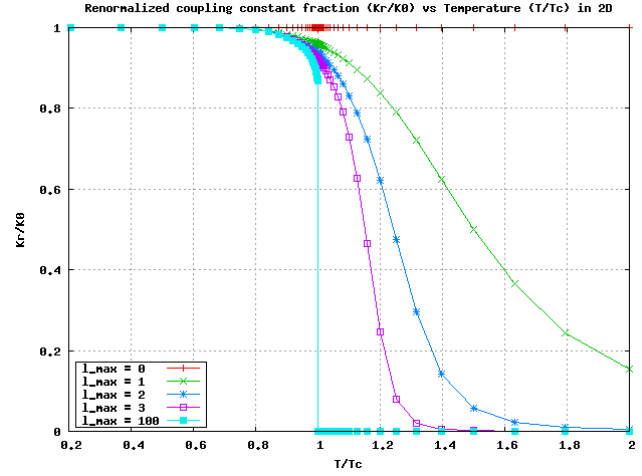
plot_2D_KrK0versusT_B_linlin.png
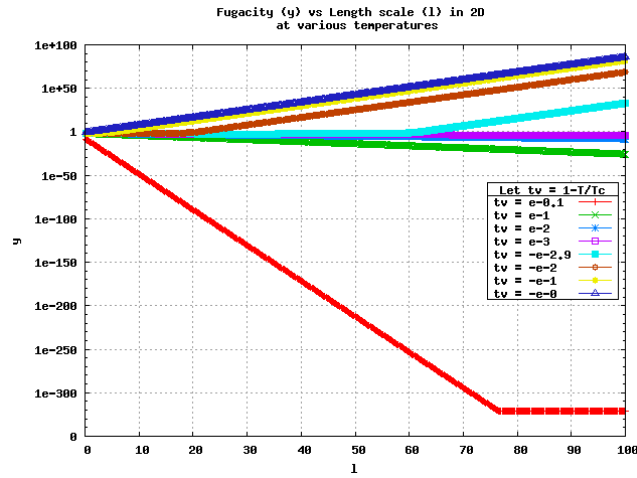
plot_2D_yversusl_B_loglin.png
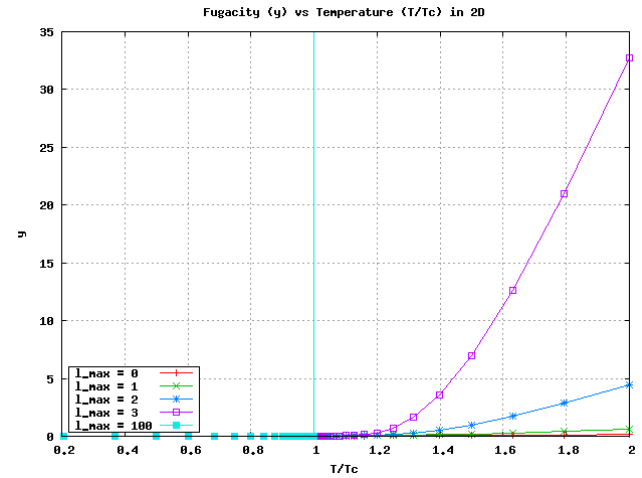
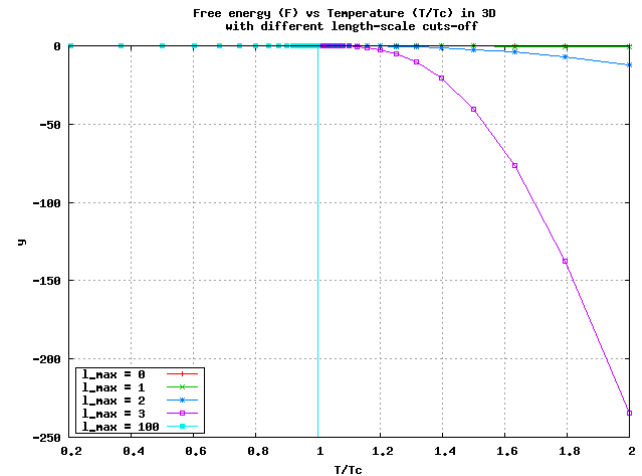plot_2D_yversusT_B_loglin.png

### 5.1.2 Minor Plots
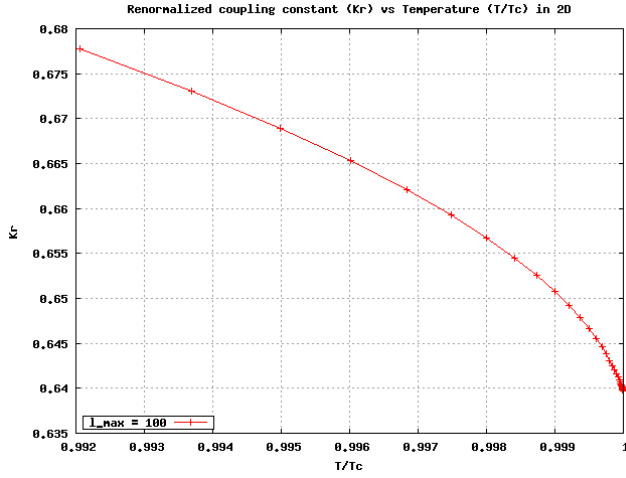
plot_2D_KrversusT_A_linlin.png
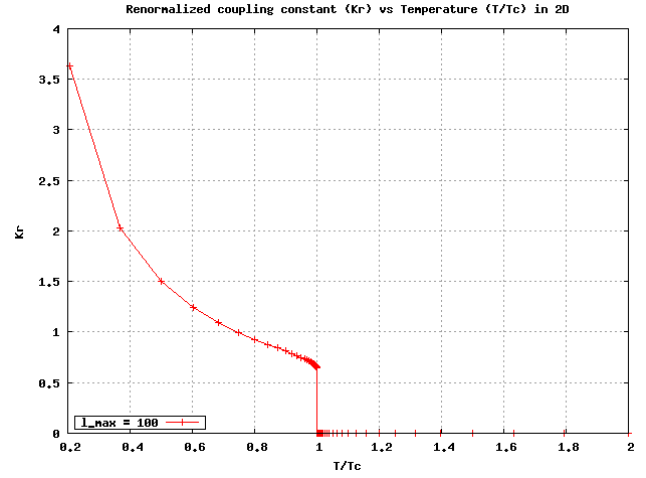
plot_2D_KrversusT_B_linlin.png

plot_2D_Kversusl_A_loglin.png

plot_2D_Kversusl_B_linlin.png

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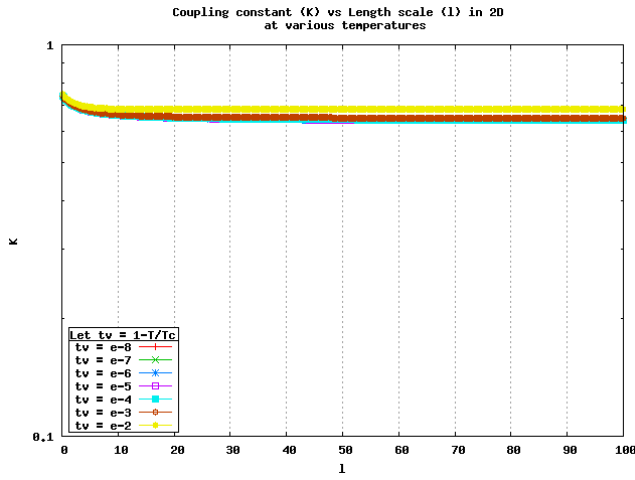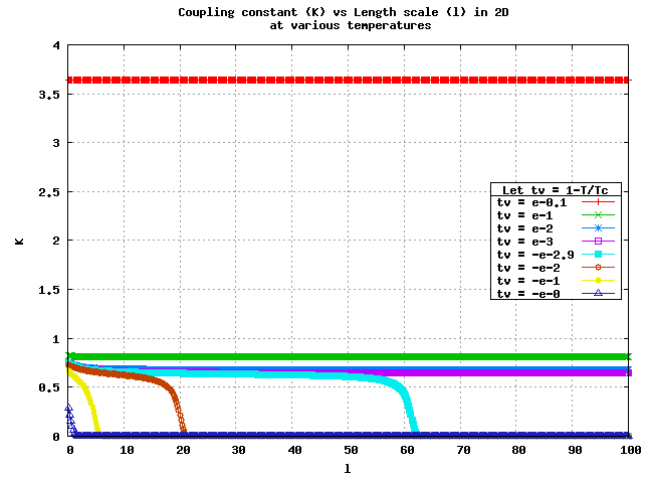
5.2 3D Program Plots

These plots use data from `ring1.c` and `derk1.c`.

5.2.1 Major Plots
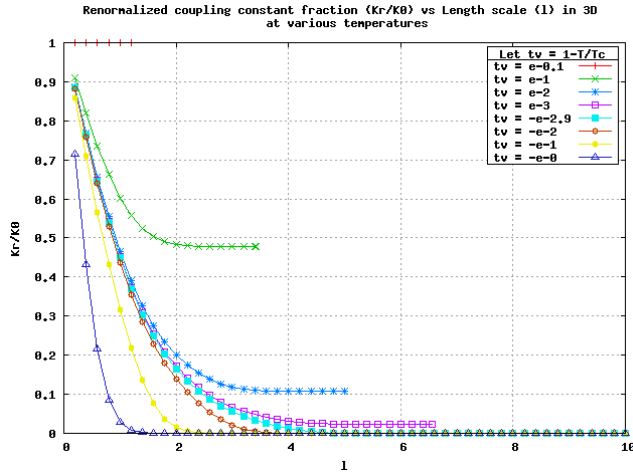
plot_3D_KrK0versusl_B_linlin.png
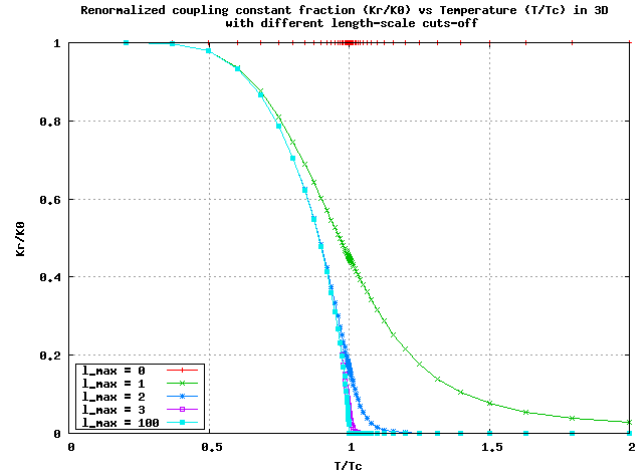
plot_3D_KrK0versusT_B_linlin.png
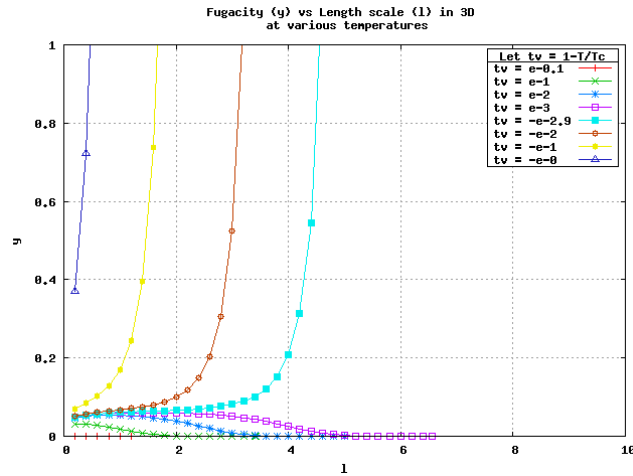
plot_3D_yversusl_B_linlin.png

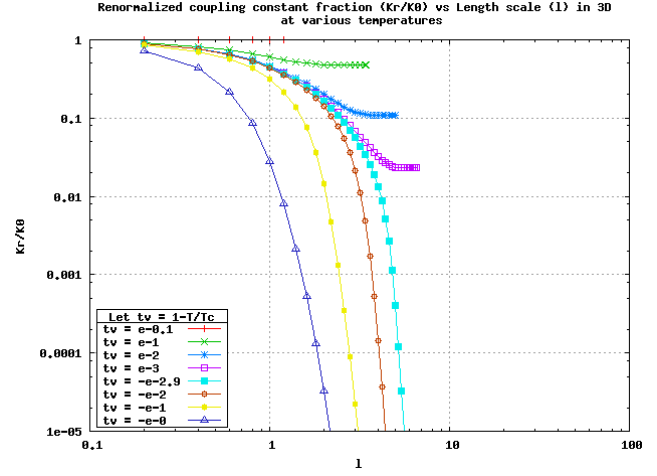plot_3D_yversusT_B_linlin.png

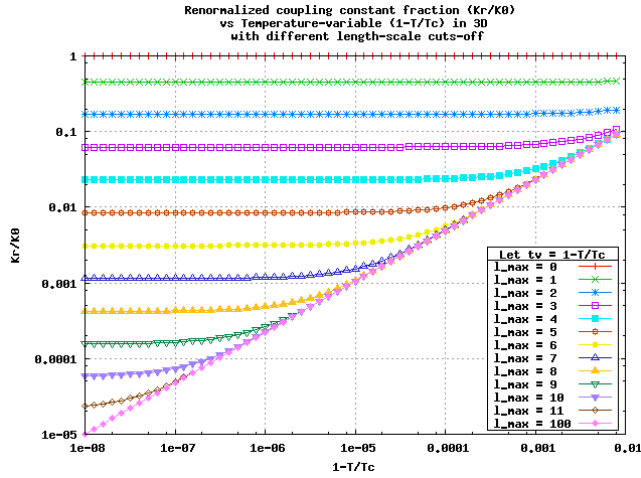plot_3D_Fversusl_B_linlin.png

plot_3D_FversusT_B_linlin.png

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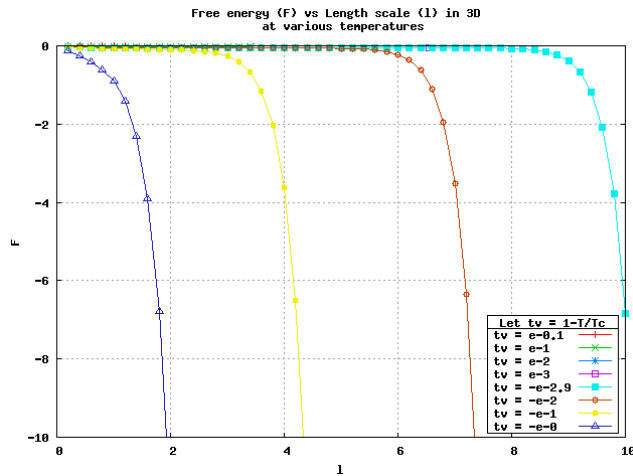
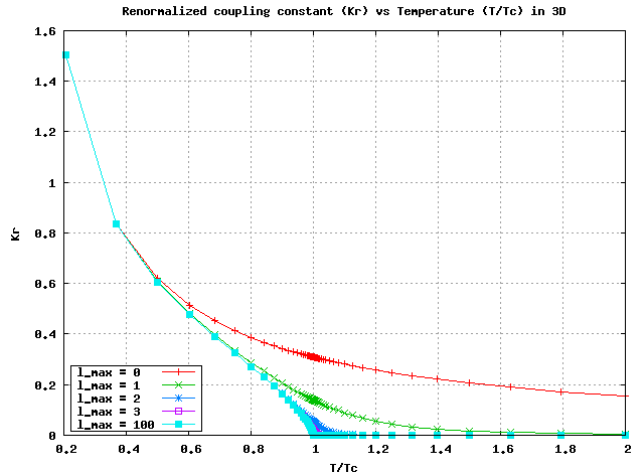## 5.2.2 Minor Plots
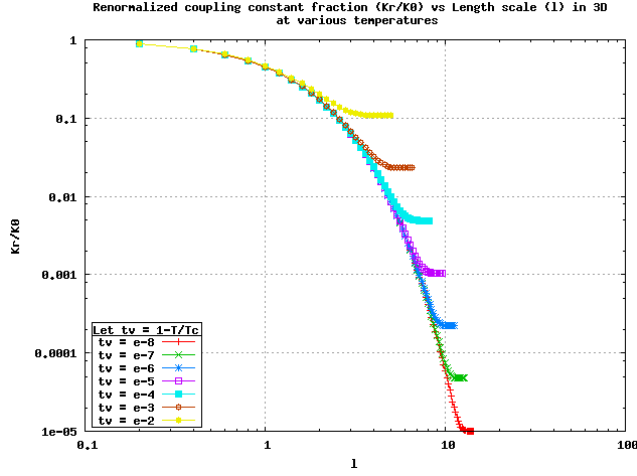
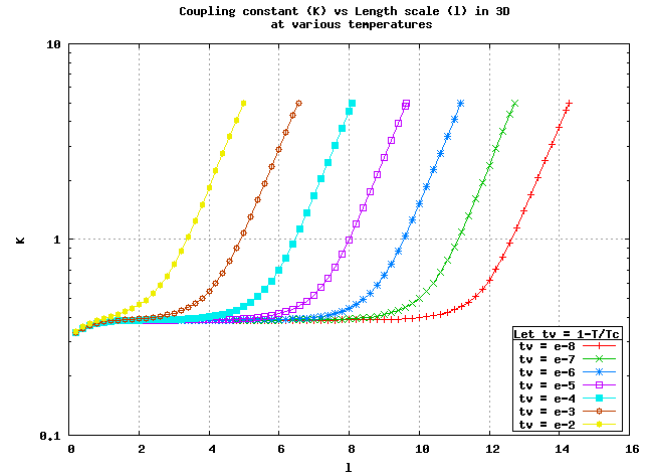plot_3D_KrK0versusl_A_loglog.png

plot_3D_KrK0versusl_B_loglog.png

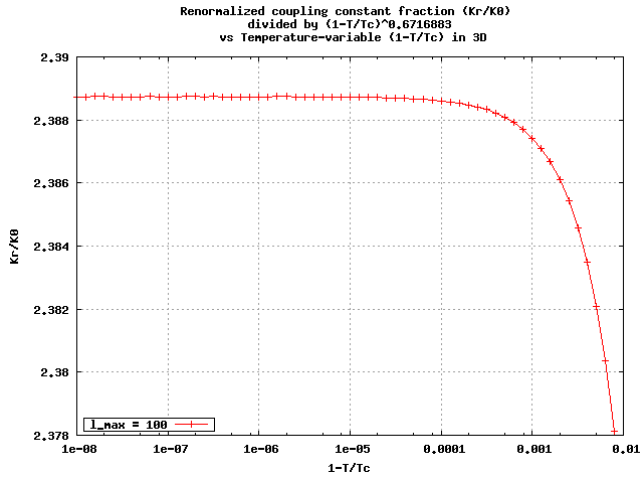plot_3D_KrK0versusTv_A_loglog.png
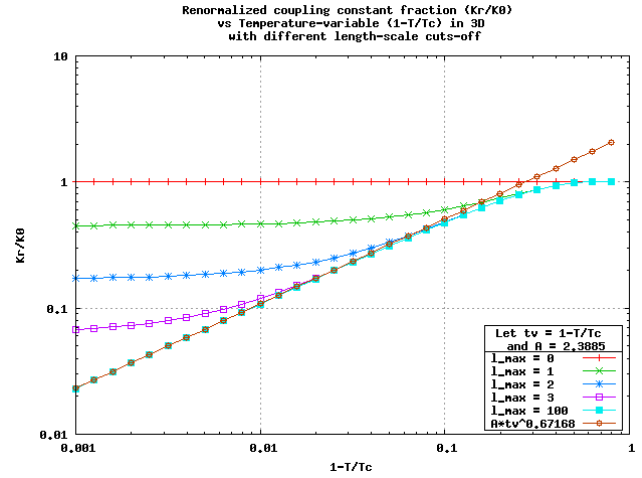
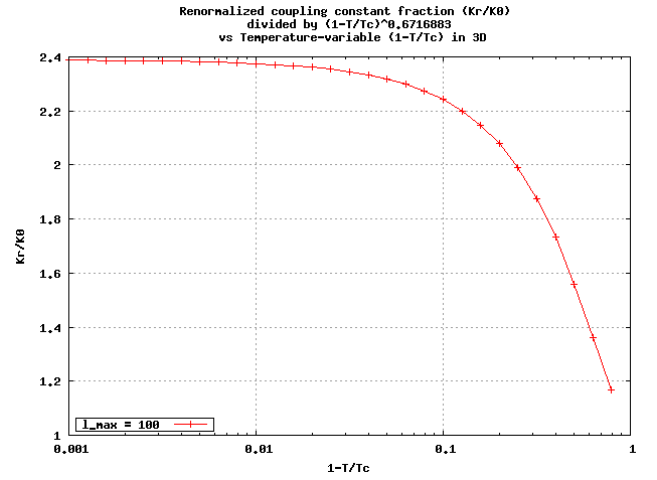

plot_3D_KrK0versusTv_B_loglog.png
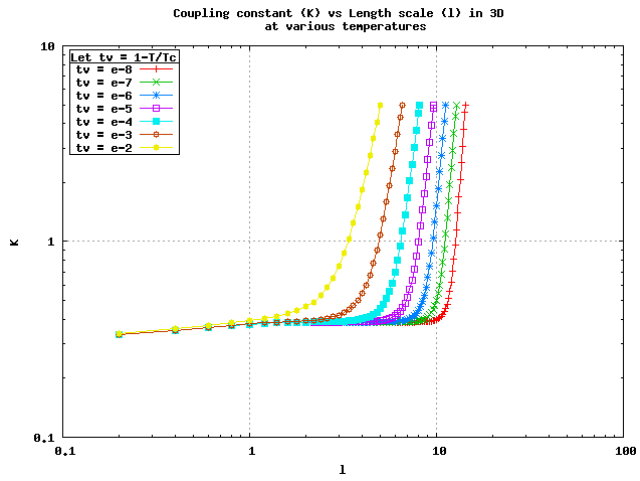

plot_3D_KrversusT_B_linlin.png
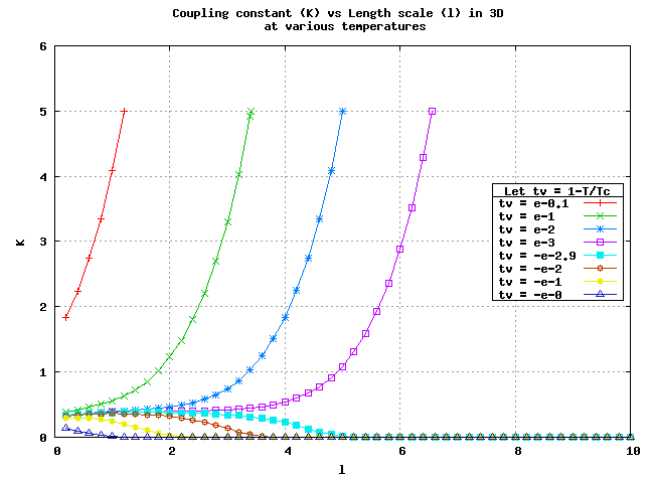

plot_3D_Kversusl_A_loglin.png
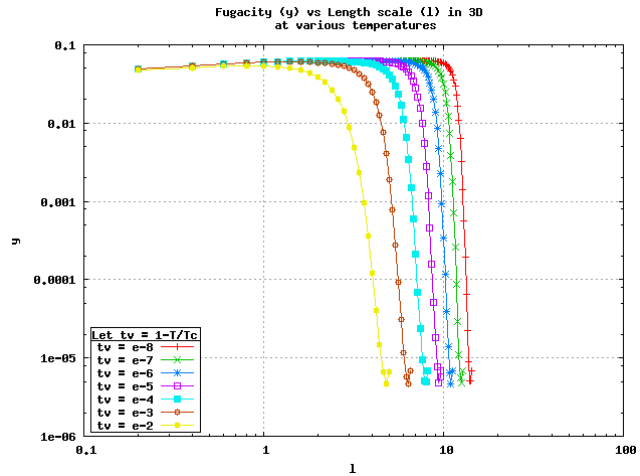
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plot_3D_KrK0versusTv_A_findA.png

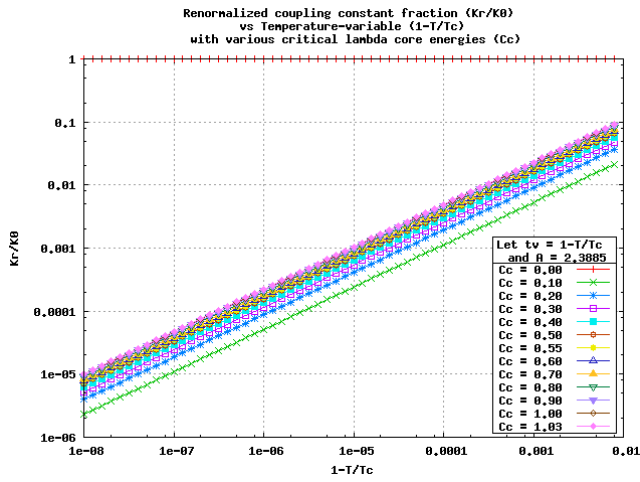plot_3D_KrK0versusTv_B_findA.png

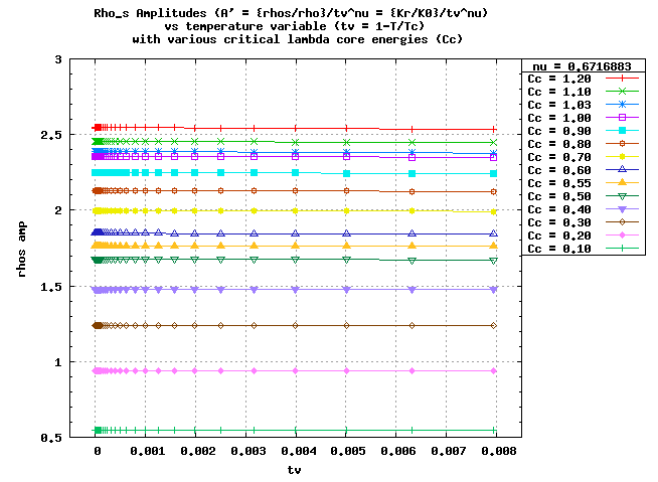plot_3D_Kversusl_A_loglog.png

plot_3D_Kversusl_B_linlin.png

plot_3D_yversusl_A_loglog.png

plot_ring3_A_KrK0versusTv.png

plot_ring3_A_rhosAmps.png