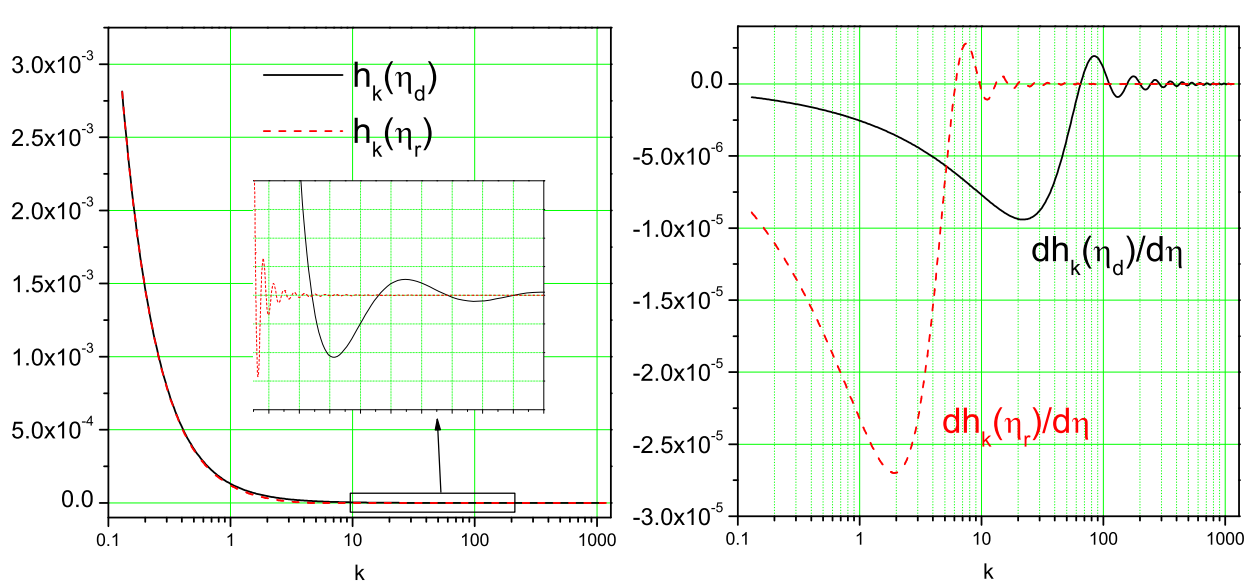
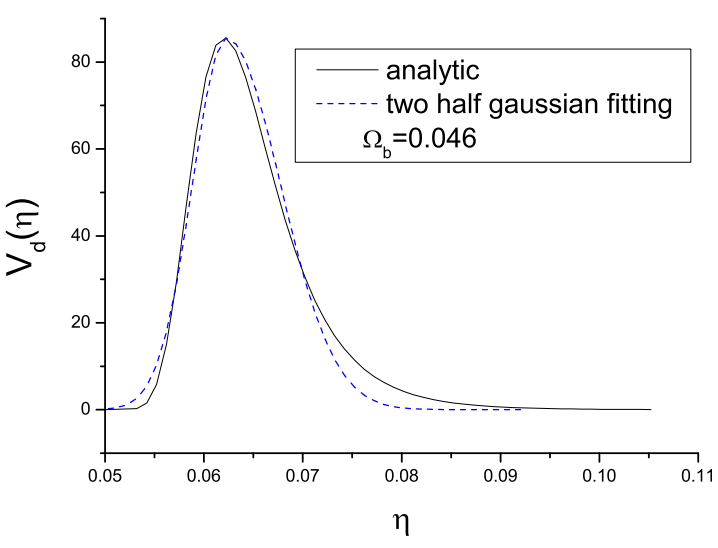
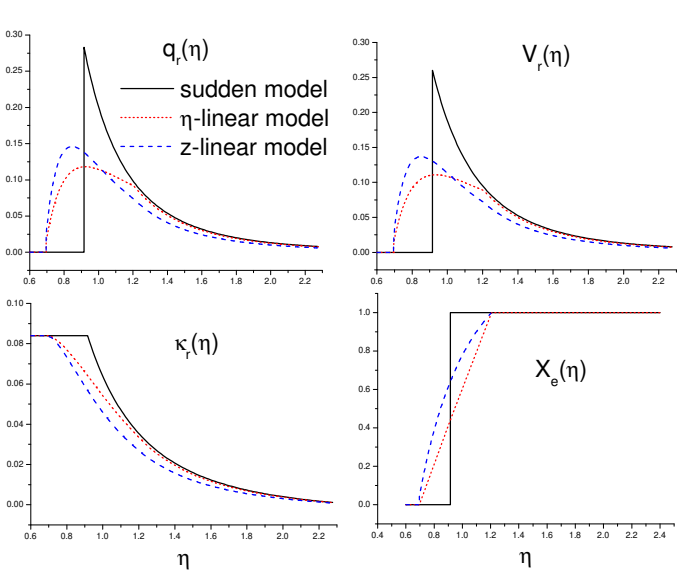
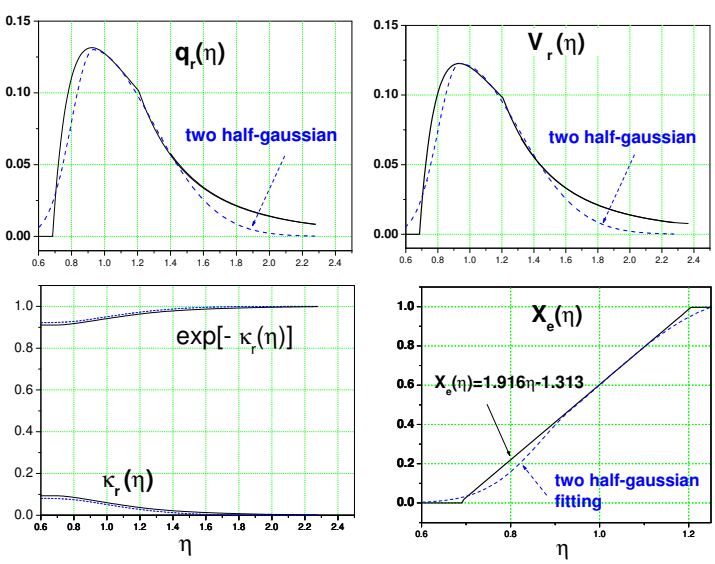
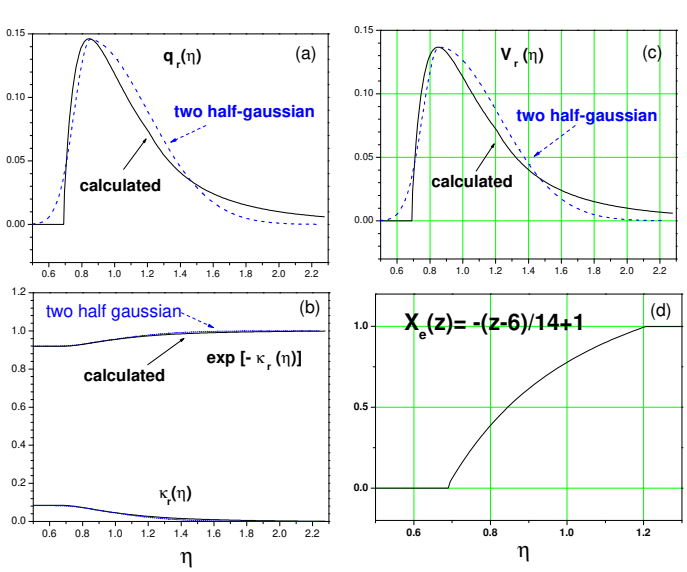
arXiv:0903.3159v2 [astro-ph.CO] 20 Mar 2009 fig

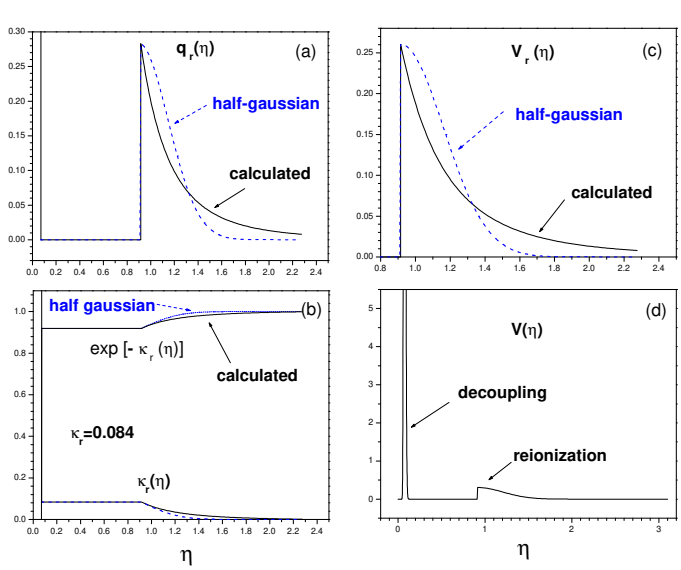


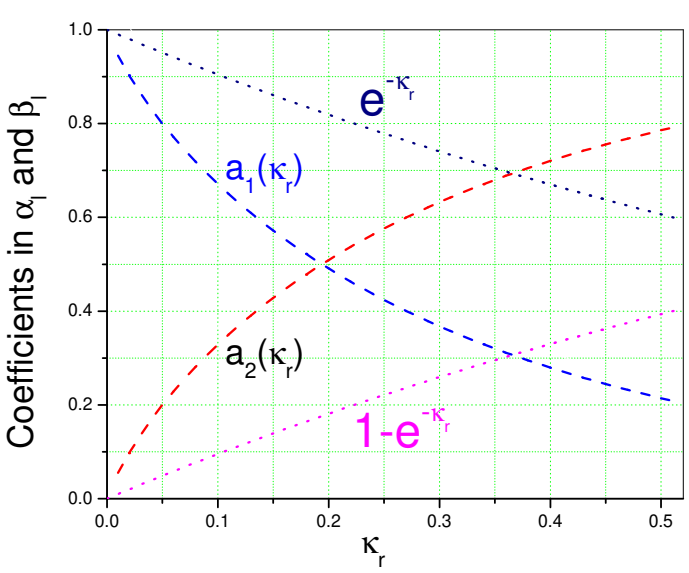

analytic
two half gaussian fitting
Ω_b=0.046
$V_d(\eta)$
η
0
20
40
60
80
0.05
0.06
0.07
0.08
0.09
0.10
0.11

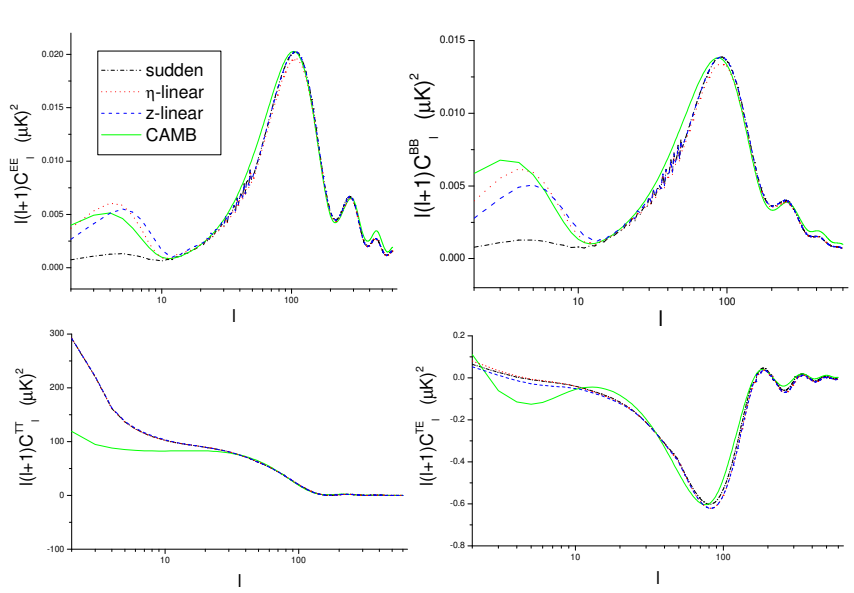

$q_r(\eta)$
sudden model
η-linear model
z-linear model
$V_r(\eta)$
$\kappa_r(\eta)$
$X_e(\eta)$
η
η

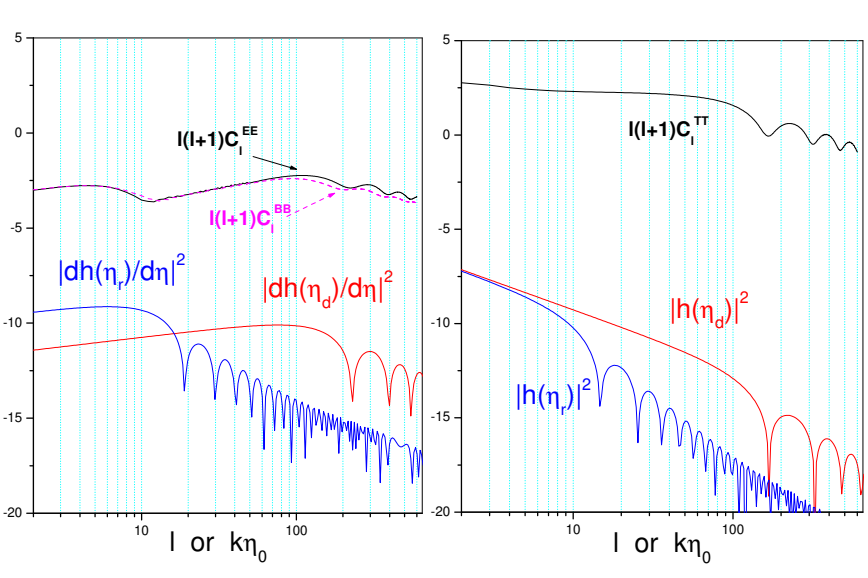

$q_r(\eta)$
two half-gaussian
$V_r(\eta)$
two half-gaussian
exp[- $\kappa_r(\eta)$]
$\kappa_r(\eta)$
$X_e(\eta)$
$X_e(\eta)$=1.916η-1.313
two half-gaussian fitting
η
η

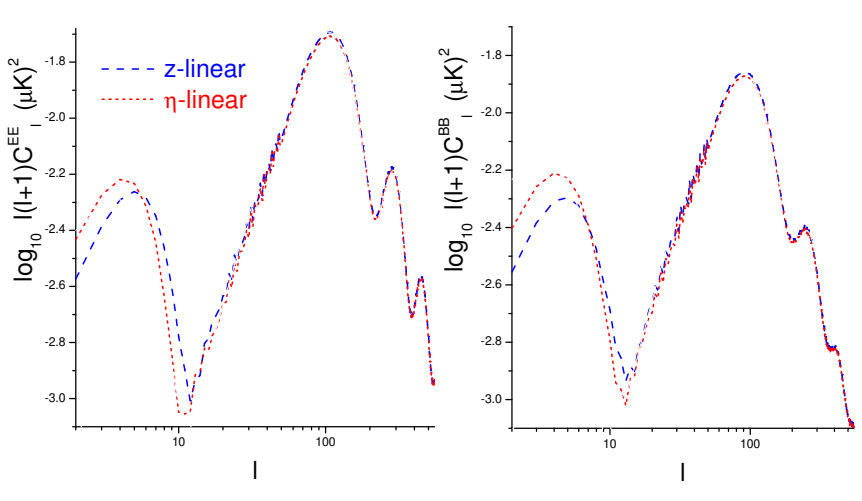

q_r(η)
(a)
two half-gaussian
calculated
V_r (η)
(c)
two half-gaussian
calculated
two half gaussian
(b)
exp [- κ_r (η)]
calculated
κ_r(η)
X_e(z)= -(z-6)/14+1
(d)
η
η

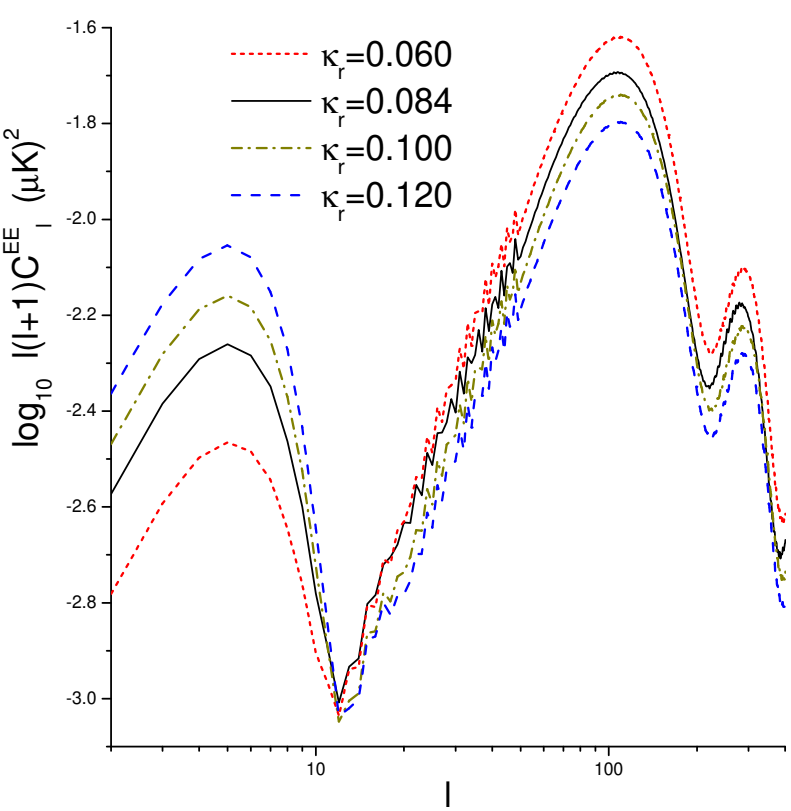

q_r(η)
(a)
half-gaussian
calculated
V_r (η)
(c)
half-gaussian
calculated
half gaussian
(b)
exp [- κ_r (η)]
calculated
κ_r=0.084
κ_r(η)
η
V(η)
(d)
decoupling
reionization
η

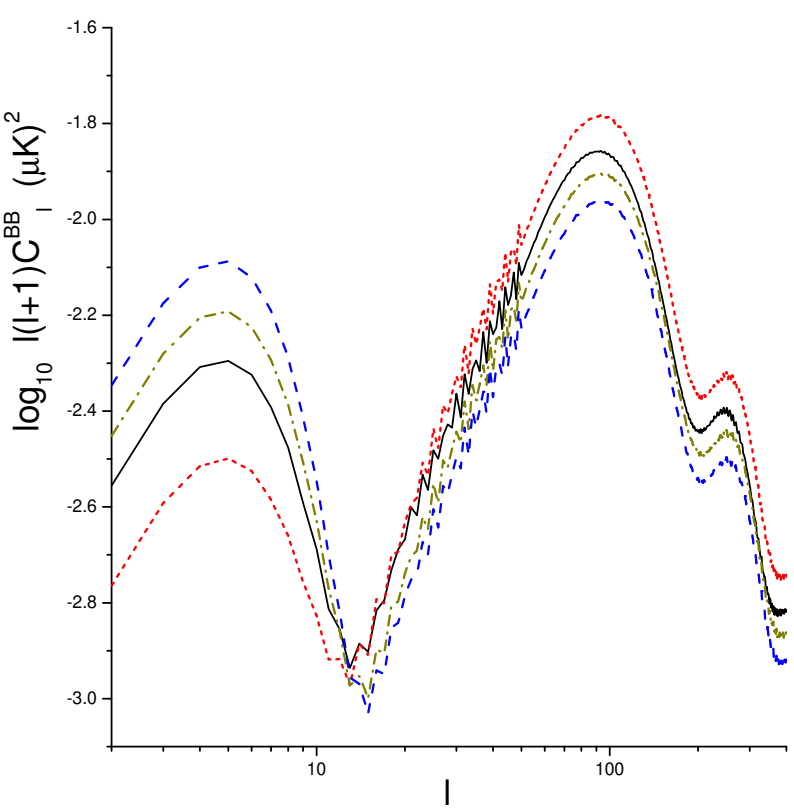

Coefficients in α_l and β_l
κ_r
$e^{-\kappa_r}$
$a_1(\kappa_r)$
$a_2(\kappa_r)$
$1-e^{-\kappa_r}$
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.1
0.2
0.3
0.4
0.5

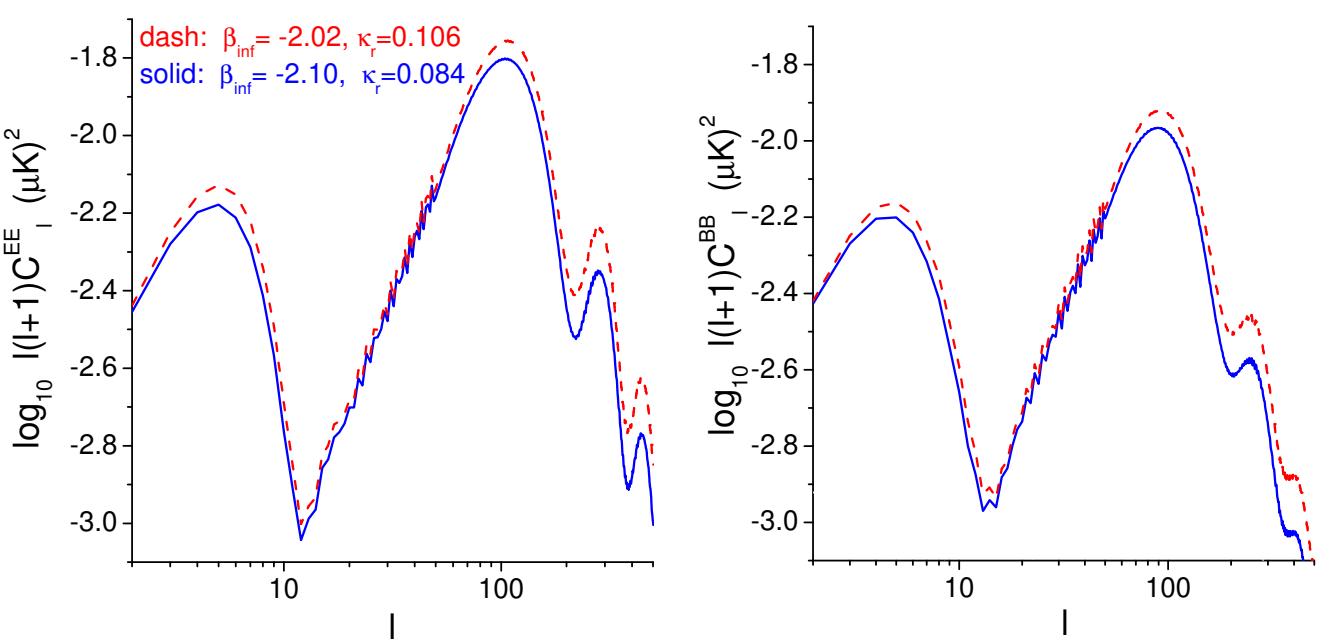

sudden
η-linear
z-linear
CAMB
l(l+1)C^EE_l (μK)^2
l(l+1)C^BB_l (μK)^2
l(l+1)C^TT_l (μK)^2
l(l+1)C^TE_l (μK)^2
l
l
l
l

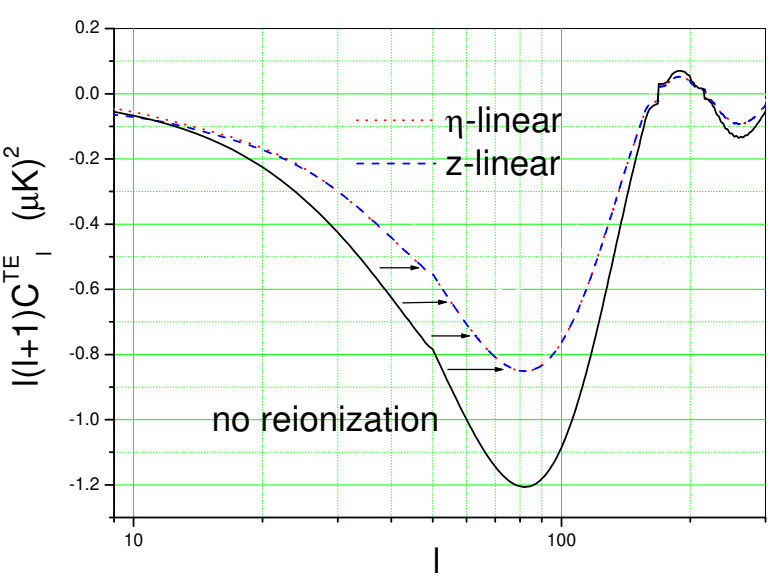

5
0
-5
-10
-15
-20
10
100
l or kη0
l(l+1)C_l^EE
l(l+1)C_l^BB
|dh(η_r)/dη|^2
|dh(η_d)/dη|^2
l(l+1)C_l^TT
|h(η_d)|^2
|h(η_r)|^2

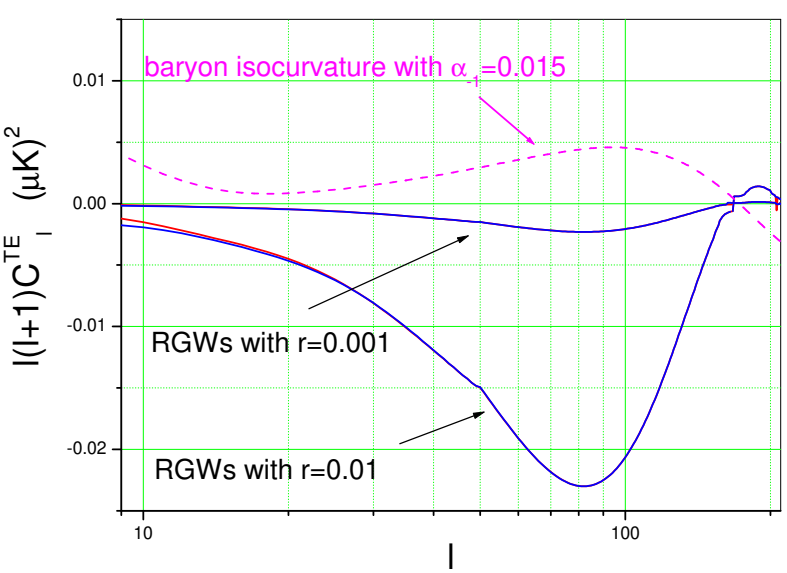

z-linear
η-linear
log10 l(l+1)C^EE_l (μK)^2
log10 l(l+1)C^BB_l (μK)^2
-1.8
-2.0
-2.2
-2.4
-2.6
-2.8
-3.0
10
100
l

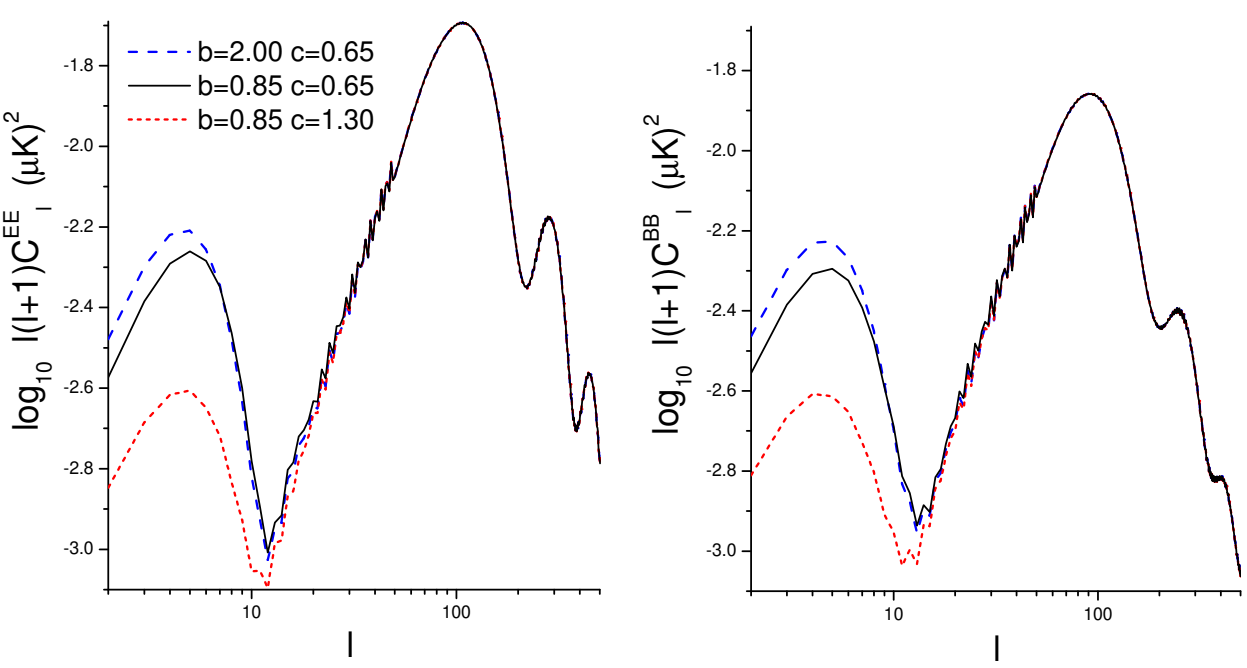

κr=0.060
κr=0.084
κr=0.100
κr=0.120
log10 l(l+1)C_l^EE (μK)^2
-1.6
-1.8
-2.0
-2.2
-2.4
-2.6
-2.8
-3.0
10
100
l


log10 l(l+1)C_l^BB (μK)^2
-1.6
-1.8
-2.0
-2.2
-2.4
-2.6
-2.8
-3.0
10
100
l


dash: β_inf= -2.02, κ_r=0.106
solid: β_inf= -2.10, κ_r=0.084
log10 l(l+1)C_l^EE (μK)^2
log10 l(l+1)C_l^BB (μK)^2
-1.8
-2.0
-2.2
-2.4
-2.6
-2.8
-3.0
10
100
l


0.2
0.0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
10
100
l
l(l+1)C^TE_l (μK)^2
η-linear
z-linear
no reionization


baryon isocurvature with α_-1=0.015
RGWs with r=0.001
RGWs with r=0.01
0.01
0.00
-0.01
-0.02
10
100
l
l(l+1)C^TE_l (μK)^2


b=2.00 c=0.65
b=0.85 c=0.65
b=0.85 c=1.30
log10 l(l+1)C_l^EE (μK)^2
log10 l(l+1)C_l^BB (μK)^2
-1.8
-2.0
-2.2
-2.4
-2.6
-2.8
-3.0
10
100
l