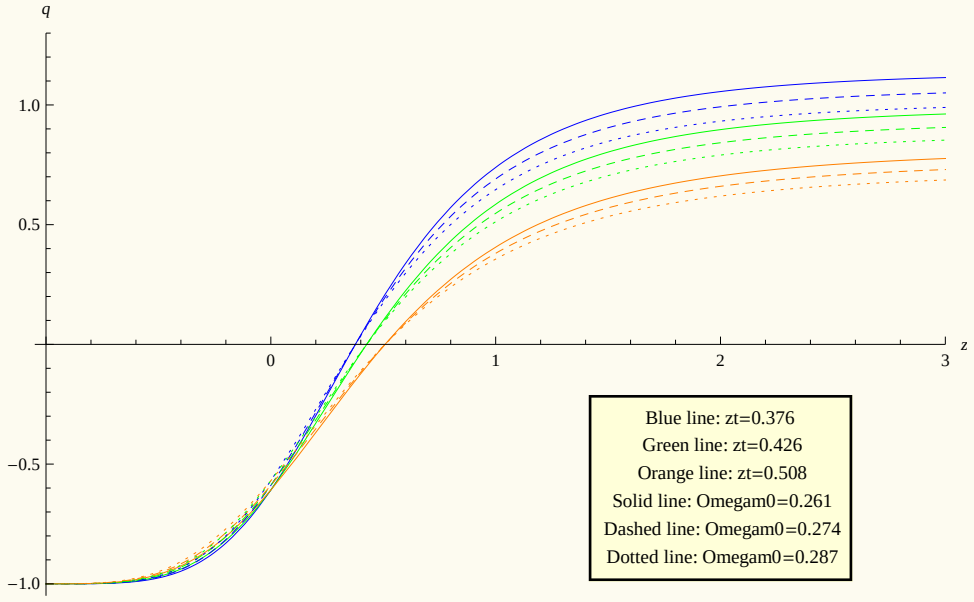
Deceleration

Grid[{{tabξICCSum2}, {pldecICCShowSum2}}]

For Ωm0∈{0.261,0.274,0.287} Table of ξ for different Ωm0~Transition combination			
Ωm0~Transition	0.426	0.376	0.508
0.261	−0.988216	−1.27874	−0.63641
0.274	−0.877755	−1.15303	−0.544482
0.287	−0.773066	−1.03381	−0.457448

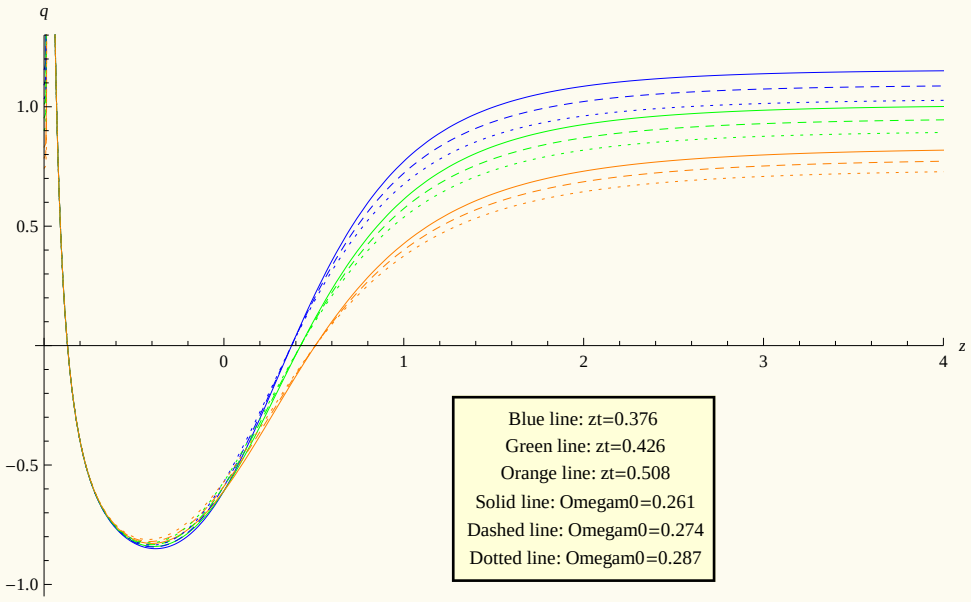
$Q_c=\xi$ H ρ_c, constant w=−1: Deceleration~Redshift



Grid[{{tabξvwExamICCPLQuintom1a}, {pldecICCPLShowSum1a}}]

ξ results for $Q_c=\xi$ H ρ_d, CPL,Quintom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−1, −0.1, 0.261}	−1.3096	−1.01727	−0.662779
{−1, −0.1, 0.274}	−1.18432	−0.907284	−0.571382
{−1, −0.1, 0.287}	−1.06552	−0.803051	−0.484861

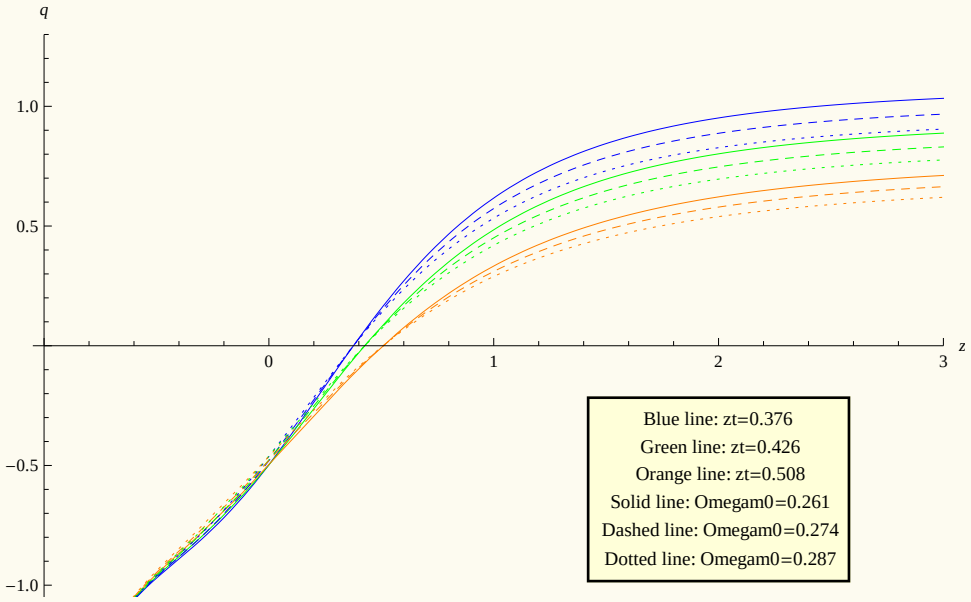
$Q_c=\xi$ H ρ_c, CPL {−1,−0.1}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLQuintom1b}, {pldecICCPLShowSum1b}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.9, 0.1, 0.261}	−1.17144	−0.899159	−0.569531
{−0.9, 0.1, 0.274}	−1.0421	−0.785036	−0.473896
{−0.9, 0.1, 0.287}	−0.919341	−0.676782	−0.383258

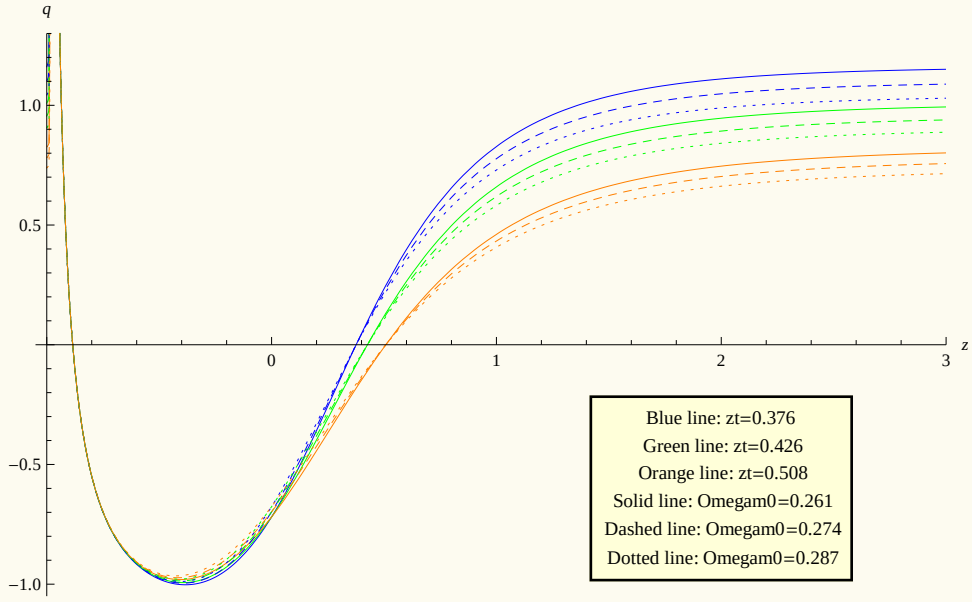
$Q_c=\xi H \rho_c$, CPL {−0.9,0.1}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLQuintom1c}, {pldecICCPLShowSum1c}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−1.1, −0.1, 0.261}	−1.3218	−1.01741	−0.648941
{−1.1, −0.1, 0.274}	−1.19968	−0.910565	−0.560672
{−1.1, −0.1, 0.287}	−1.08396	−0.809397	−0.477189

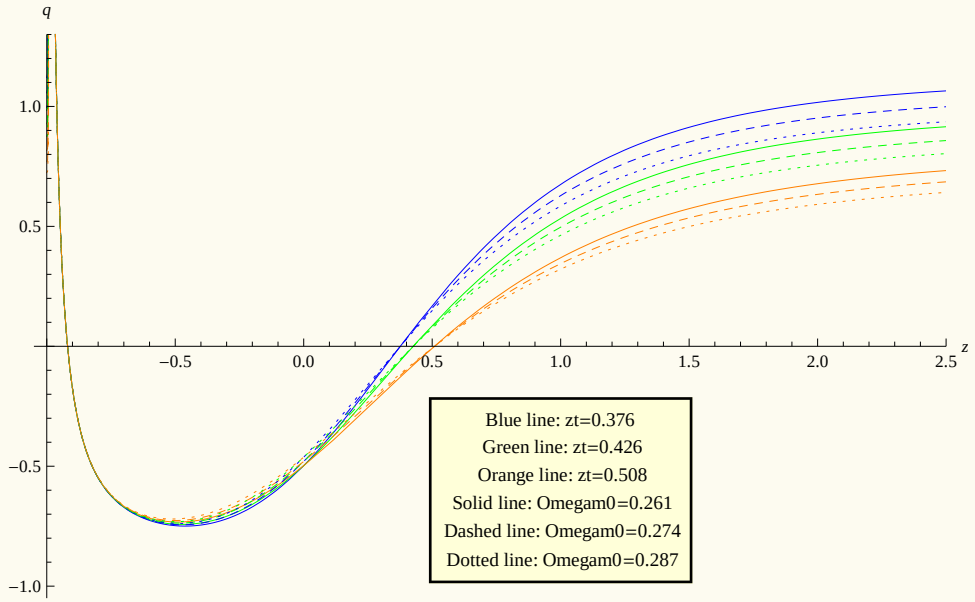
$Q_c=\xi H \rho_c$, CPL {−1.1,−0.1}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLQuintessence2a}, {pldecICCPLShowSum2a}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintessence.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.9, −0.05, 0.261}	−1.24197	−0.966983	−0.633261
{−0.9, −0.05, 0.274}	−1.1133	−0.853591	−0.538451
{−0.9, −0.05, 0.287}	−0.991189	−0.746047	−0.448612

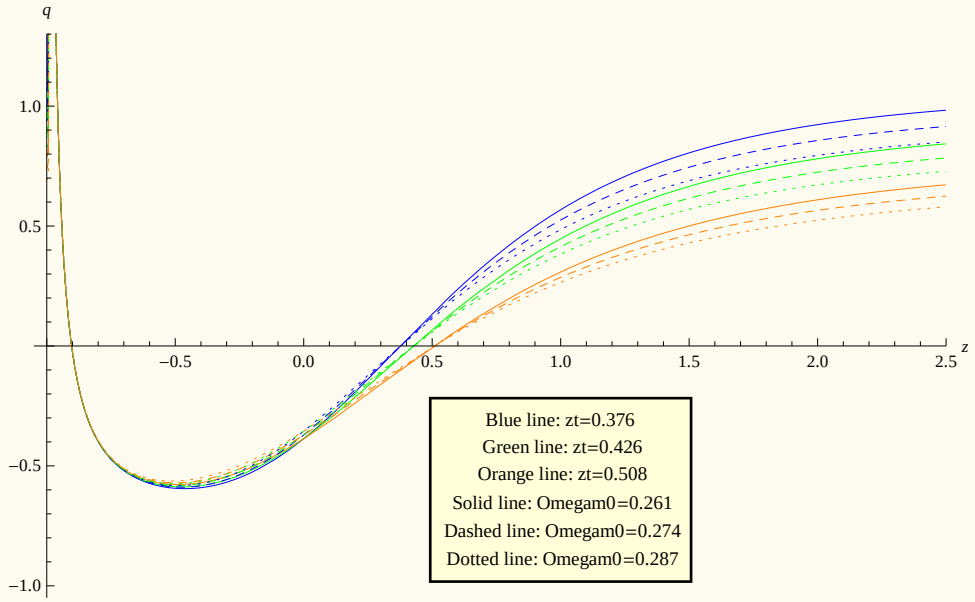
$Q_c=\xi H \rho_c$, CPL {−0.9,−0.05}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLQuintessence2b}, {pldecICCPLShowSum2b}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintessence.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.8, −0.05, 0.261}	−1.1341	−0.88178	−0.575136
{−0.8, −0.05, 0.274}	−1.00224	−0.765204	−0.477157
{−0.8, −0.05, 0.287}	−0.877015	−0.654557	−0.384235

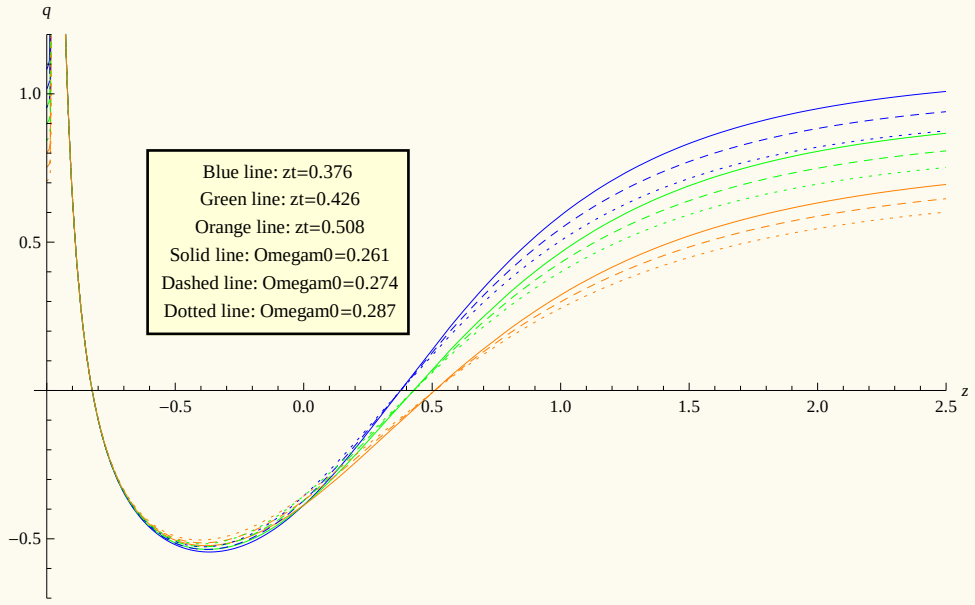
$Q_c=\xi H \rho_c$, CPL {−0.8,−0.05}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLQuintessence2c}, {pldecICCPLShowSum2c}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintessence.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.8, −0.1, 0.261}	−1.16484	−0.911193	−0.602568
{−0.8, −0.1, 0.274}	−1.0332	−0.794865	−0.504869
{−0.8, −0.1, 0.287}	−0.908194	−0.684458	−0.412217

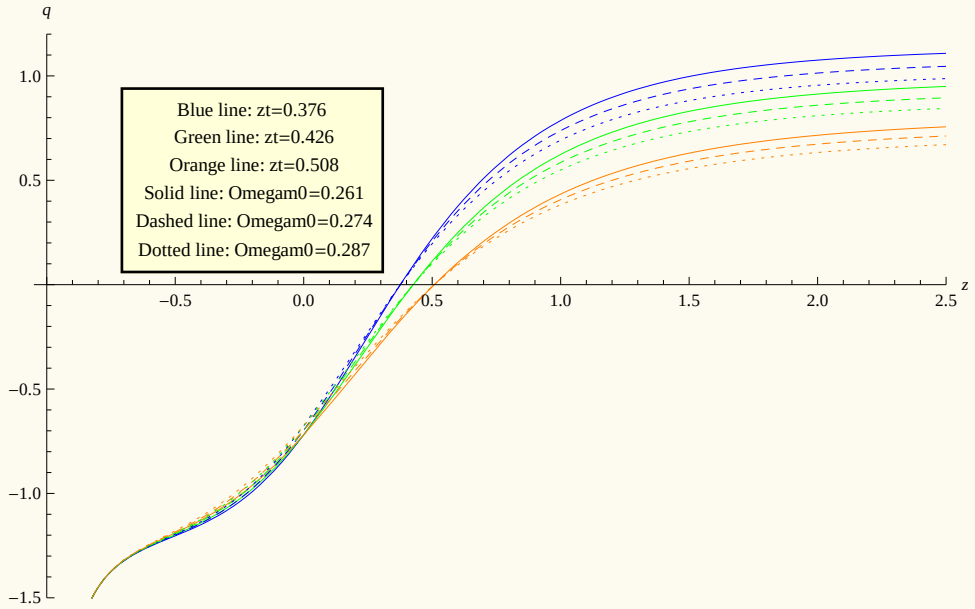
$Q_c=\xi H \rho_c$, CPL {−0.8,−0.1}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLPhantom3a}, {pldecICCPLShowSum3a}}]

ξ results for $Q_c=\xi H \rho_d$, CPL, Phantom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−1.1, 0.05, 0.261}	−1.28773	−0.985673	−0.620668
{−1.1, 0.05, 0.274}	−1.16498	−0.878139	−0.531617
{−1.1, 0.05, 0.287}	−1.04864	−0.776298	−0.447379

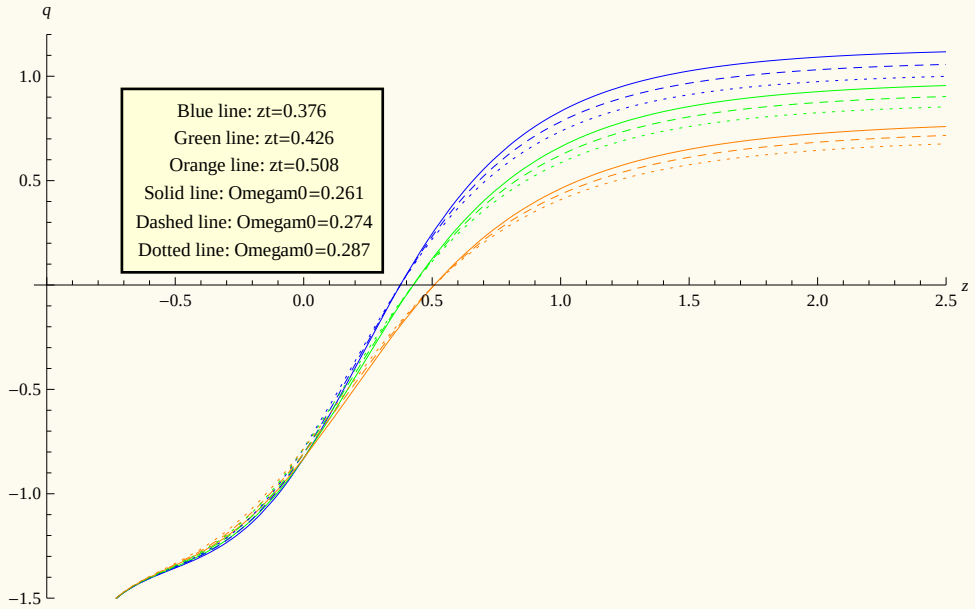
$Q_c=\xi H \rho_c$, CPL {−1.1,0.05}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLPhantom3b}, {pldecICCPLShowSum3b}}]

ξ results for $Q_c=\xi H \rho_d$, CPL, Phantom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{-1.2, 0.05, 0.261}	-1.28596	-0.974639	-0.599077
{-1.2, 0.05, 0.274}	-1.16637	-0.870255	-0.513154
{-1.2, 0.05, 0.287}	-1.05311	-0.771476	-0.431951

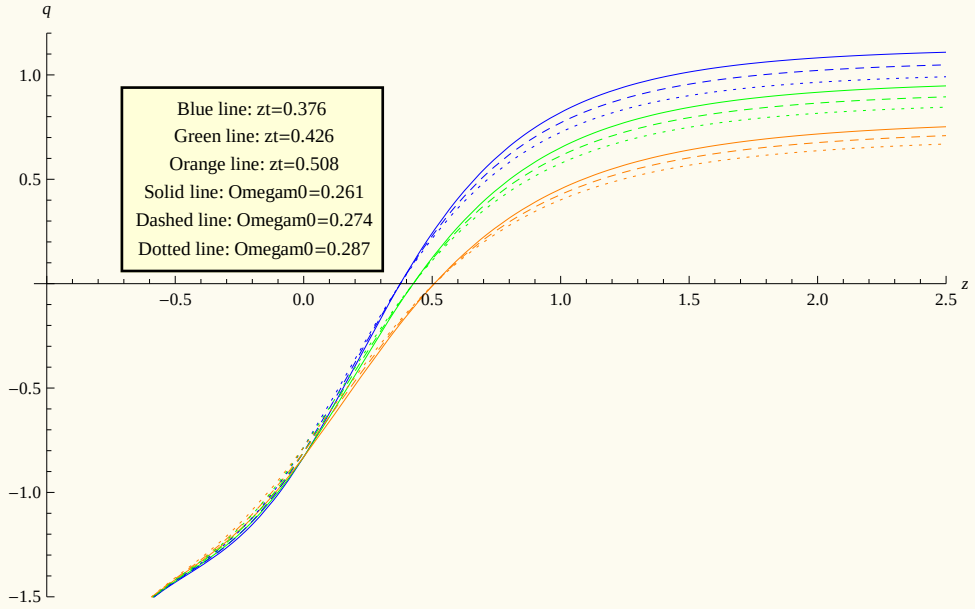
$Q_c=\xi H \rho_c$, CPL {−1.2,0.05}: Deceleration~Redshift



Grid[{{tabξvwExamICCPLPhantom3c}, {pldecICCPLShowSum3c}}]

ξ results for $Q_c=\xi H \rho_d$, CPL, Phantom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{-1.2, 0.1, 0.261}	-1.27697	-0.966278	-0.591655
{-1.2, 0.1, 0.274}	-1.15717	-0.861665	-0.505474
{-1.2, 0.1, 0.287}	-1.0437	-0.762665	-0.424022

$Q_c=\xi H \rho_c$, CPL {−1.2,0.1}: Deceleration~Redshift



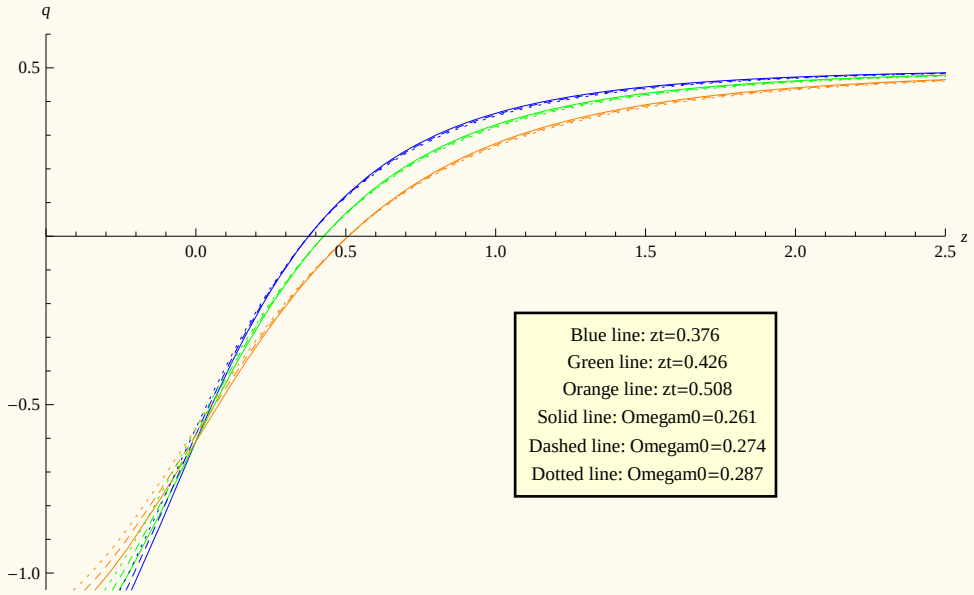
```
Grid[{{tabξI2CCSum2}, {pldecI2CCShowSum2}}]
```

For Ωm0∈{0.261,0.274,0.287},w=−1

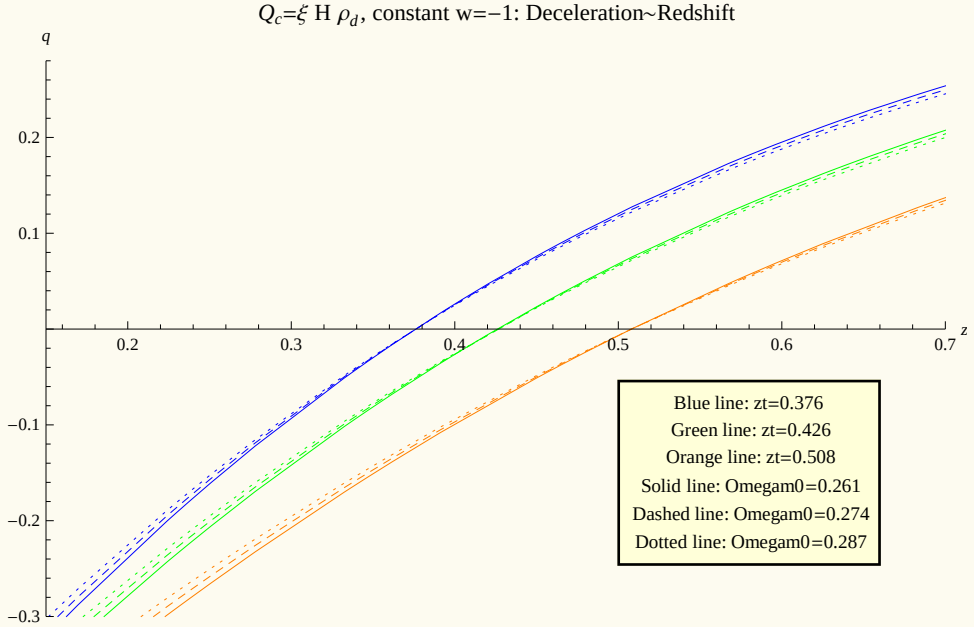
Table of ξ for different Ωm0~Transition combination

Ωm0~Transition	0.426	0.376	0.508
0.261	−0.828666	−1.07368	−0.532564
0.274	−0.760999	−1.00068	−0.471298
0.287	−0.692386	−0.92662	−0.409217

$Q_c=\xi$ H ρ_d, constant w=−1: Deceleration~Redshift



$Q_c=\xi$ H ρ_d, constant w=−1: Deceleration~Redshift

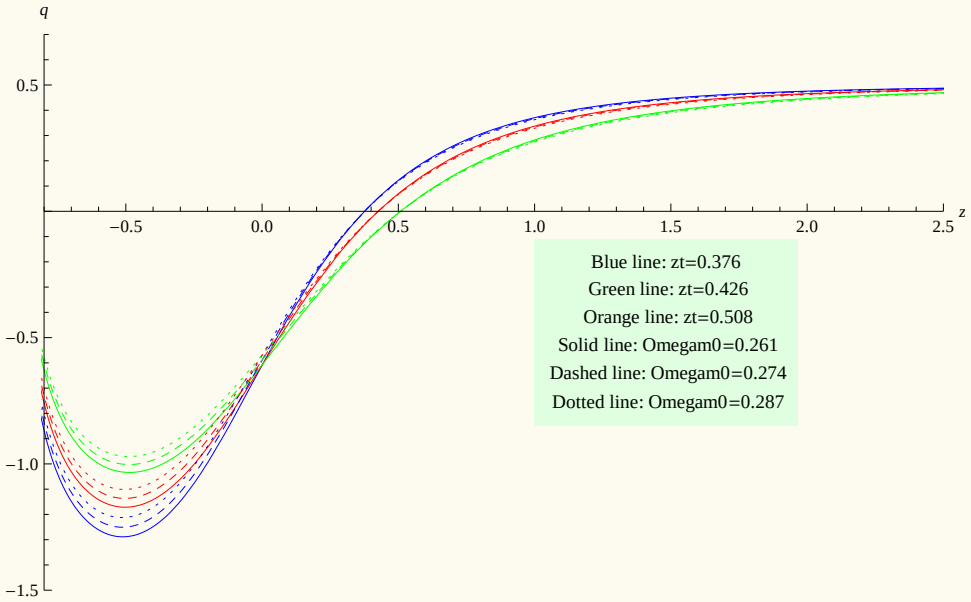


I tried to use log, loglinear, loglog axis to plot them out, but the situation never change. Lines for different Ωm0 here are too close to each other. The same problem holds for other CPL parameterized models with interaction $Q_c = \xi H \rho_d$.

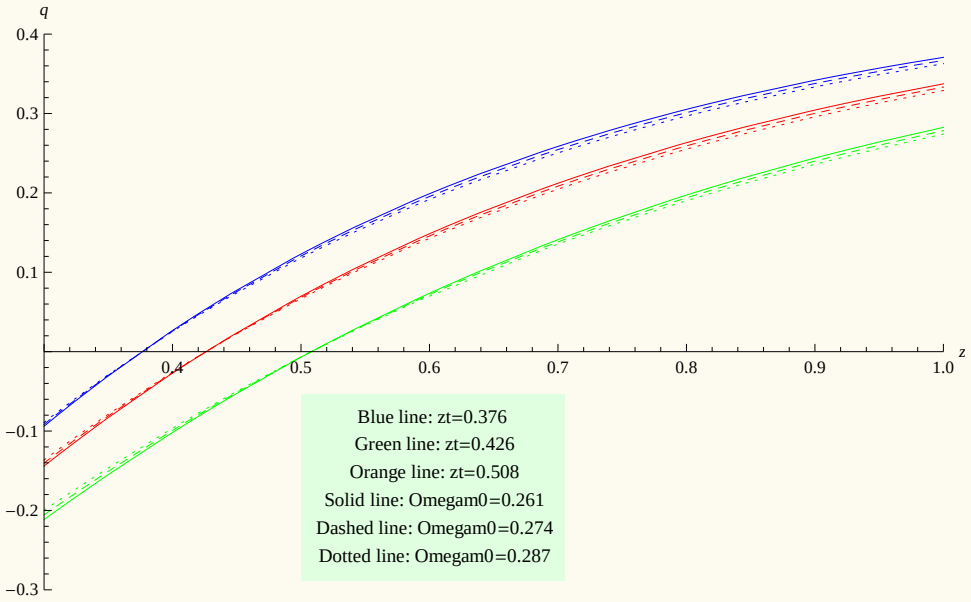
```
Grid[{{tabξvwExamI2CCPL1a}, {pldecI2CCPLShowSum1a}}]
```

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−1, −0.1, 0.261}	−1.11971	−0.869939	−0.566846
{−1, −0.1, 0.274}	−1.04665	−0.802206	−0.505491
{−1, −0.1, 0.287}	−0.972541	−0.733526	−0.44332

$Q_c=\xi H \rho_d$, CPL−Quintom {−1,−0.1}: Deceleration ~ Redshift



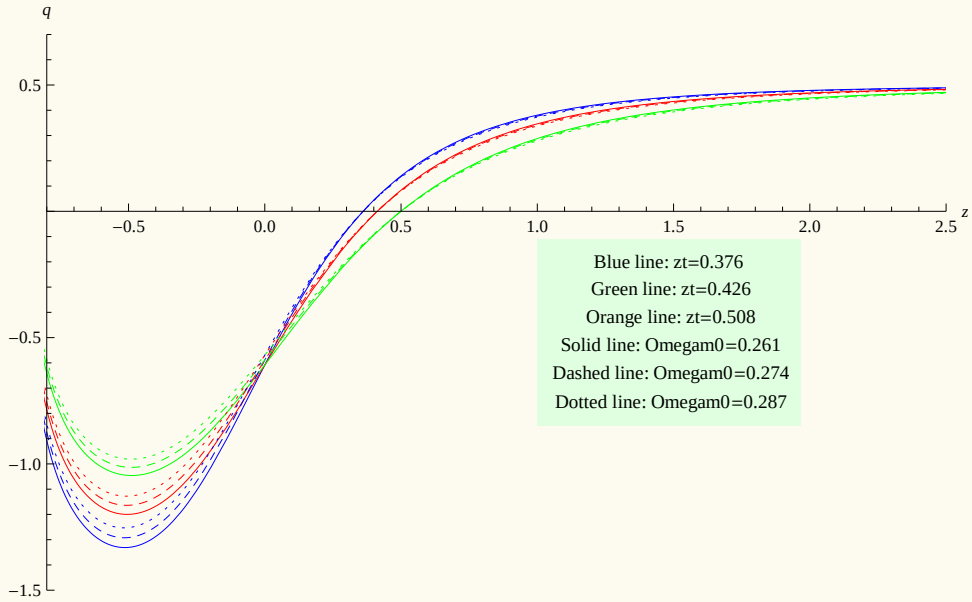
$Q_c=\xi H \rho_d$, CPL−Quintom {−1,−0.1}: Deceleration ~ Redshift



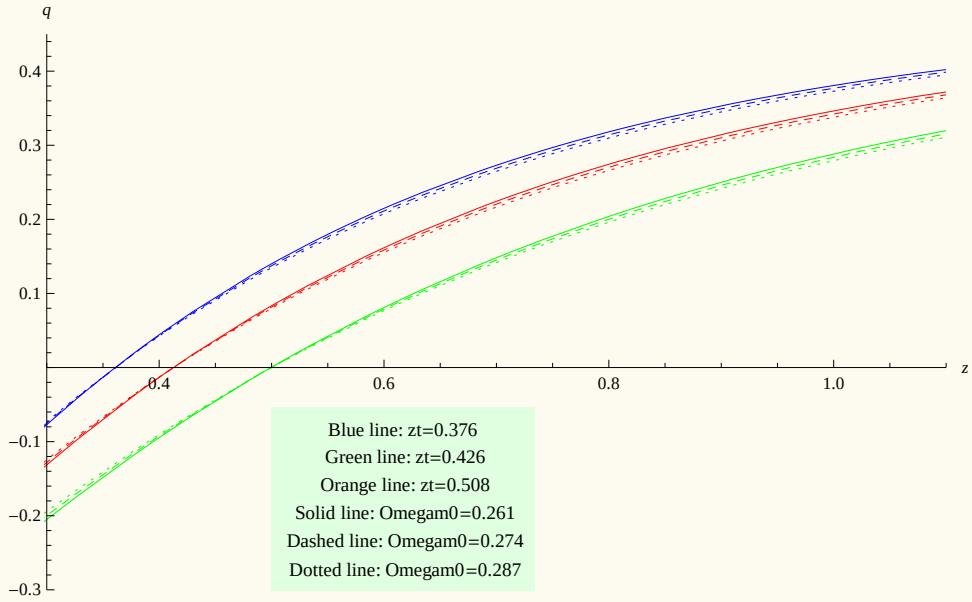
```
Grid[{{tabξvwExamI2CCPL1b}, {pldecI2CCPLShowSum1b}}]
```

ξ results for $Q_c=\xi$ H ρ_d, CPL,Quintom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{-1.1, -0.1, 0.261}	-1.20901	-0.93093	-0.594023
{-1.1, -0.1, 0.274}	-1.13446	-0.861656	-0.53104
{-1.1, -0.1, 0.287}	-1.05887	-0.791437	-0.467245

$Q_c=\xi$ H ρ_d, CPL−Quintom {−1.1,−0.1}: Deceleration ~ Redshift



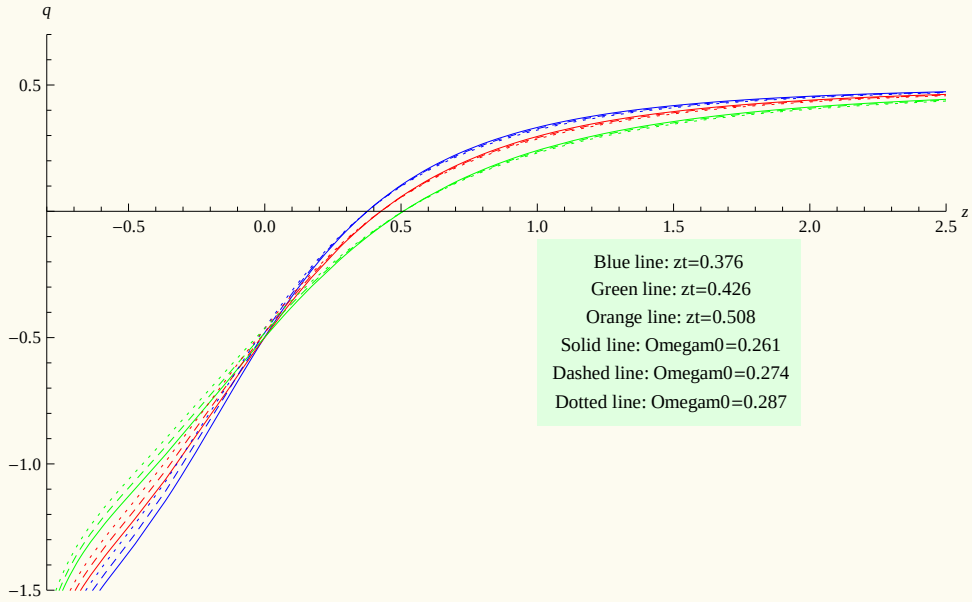
$Q_c=\xi$ H ρ_d, CPL−Quintom {−1.1,−0.1}: Deceleration ~ Redshift



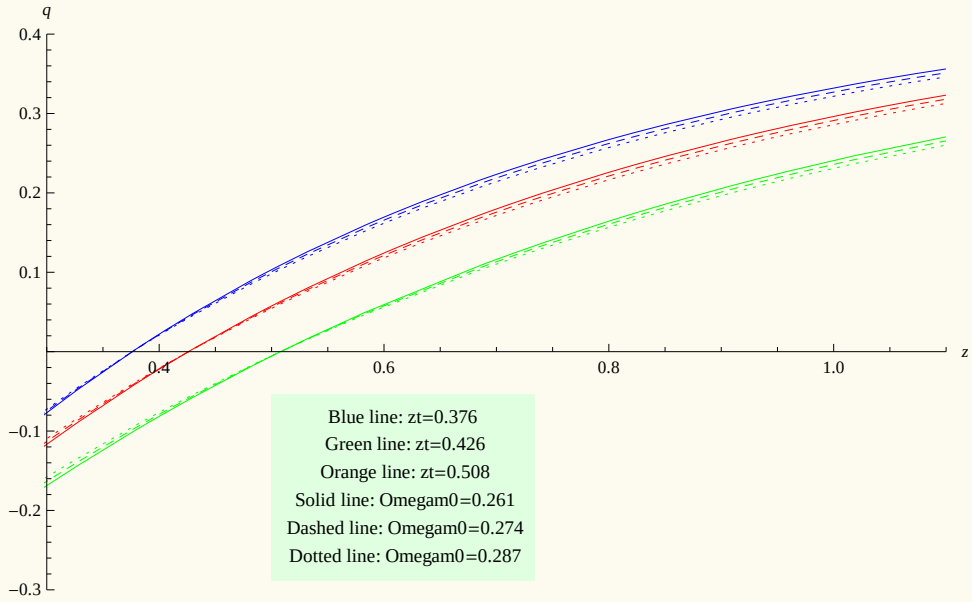
Grid[{{tabξvwExamI2CCPL1c}, {pldecI2CCPLShowSum1c}}]

ξ results for $Q_c=\xi$ H ρ_d, CPL,Quintom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.9, 0.1, 0.261}	−0.886225	−0.67782	−0.427023
{−0.9, 0.1, 0.274}	−0.814744	−0.611735	−0.367437
{−0.9, 0.1, 0.287}	−0.742209	−0.544702	−0.307032

$Q_c=\xi$ H ρ_d, CPL−Quintom {−0.9,0.1}: Deceleration ~ Redshift



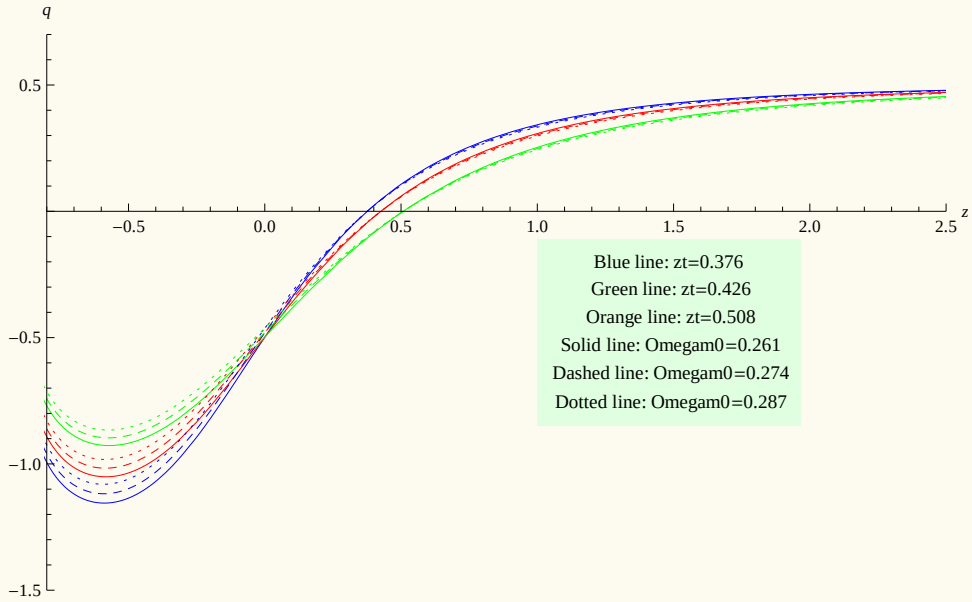
$Q_c=\xi$ H ρ_d, CPL−Quintom {−0.9,0.1}: Deceleration ~ Redshift



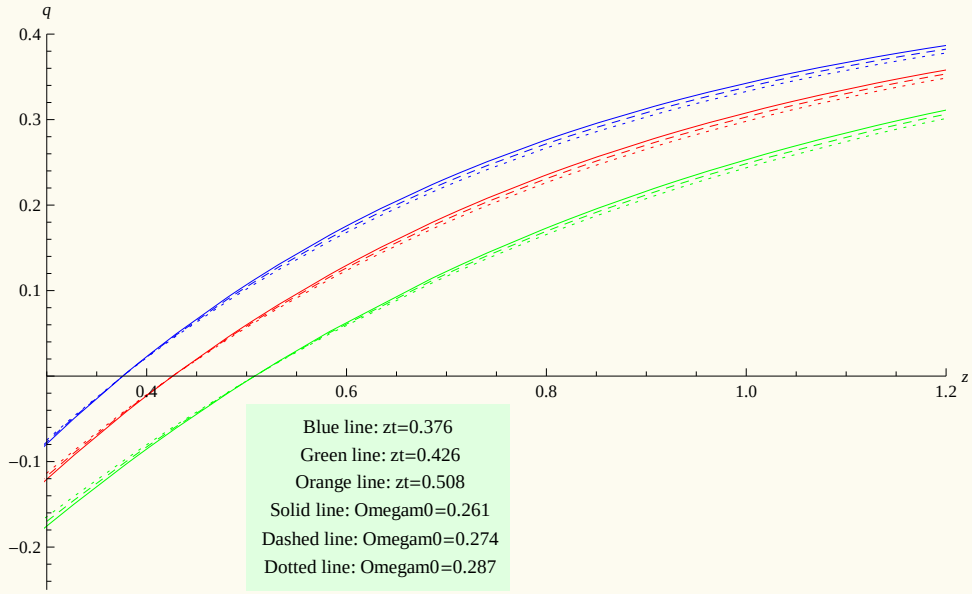
```
Grid[{{tabξvwExamI2CCPL2a}, {pldecI2CCPLShowSum2a}}]
```

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintessence.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.9, −0.05, 0.261}	−0.971889	−0.756214	−0.49467
{−0.9, −0.05, 0.274}	−0.900335	−0.69004	−0.434963
{−0.9, −0.05, 0.287}	−0.827729	−0.622917	−0.374436

$Q_c=\xi H \rho_d$, CPL−Quintessence {−0.9,−0.05}: Deceleration ~ Redshift



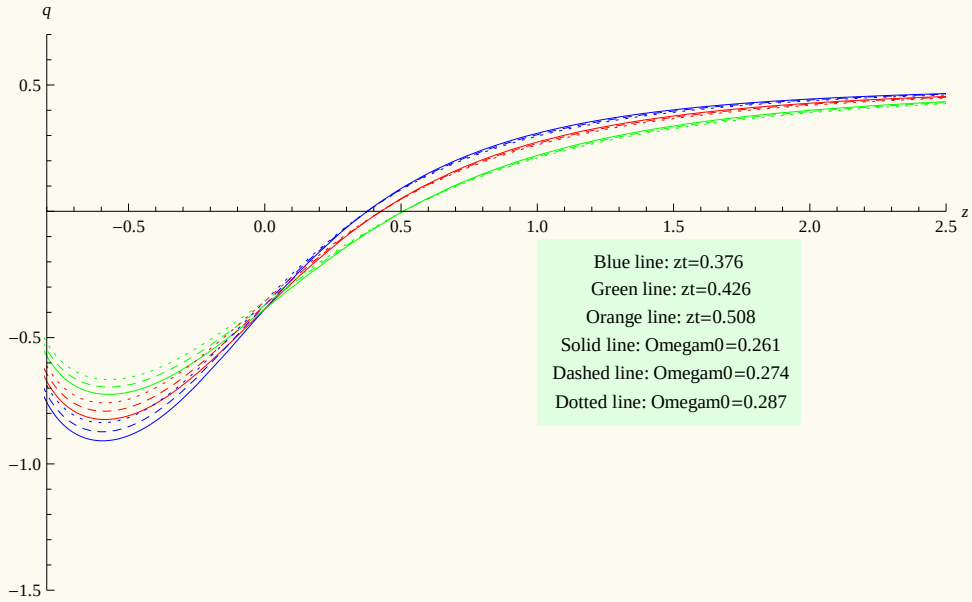
$Q_c=\xi H \rho_d$, CPL−Quintessence {−0.9,−0.05}: Deceleration ~ Redshift



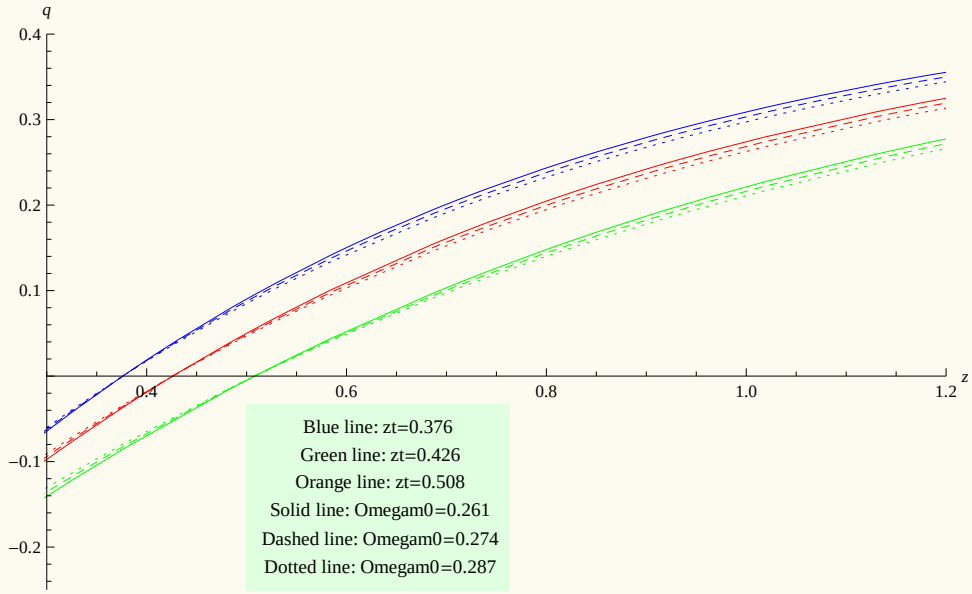
Grid[{{tabξvwExamI2CCPL2b}, {pldecI2CCPLShowSum2b}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintessence.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.8, −0.05, 0.261}	−0.807199	−0.627261	−0.408712
{−0.8, −0.05, 0.274}	−0.737117	−0.562601	−0.35059
{−0.8, −0.05, 0.287}	−0.665981	−0.496992	−0.291645

$Q_c=\xi H \rho_d$, CPL−Quintessence {−0.8,−0.05}: Deceleration ~ Redshift



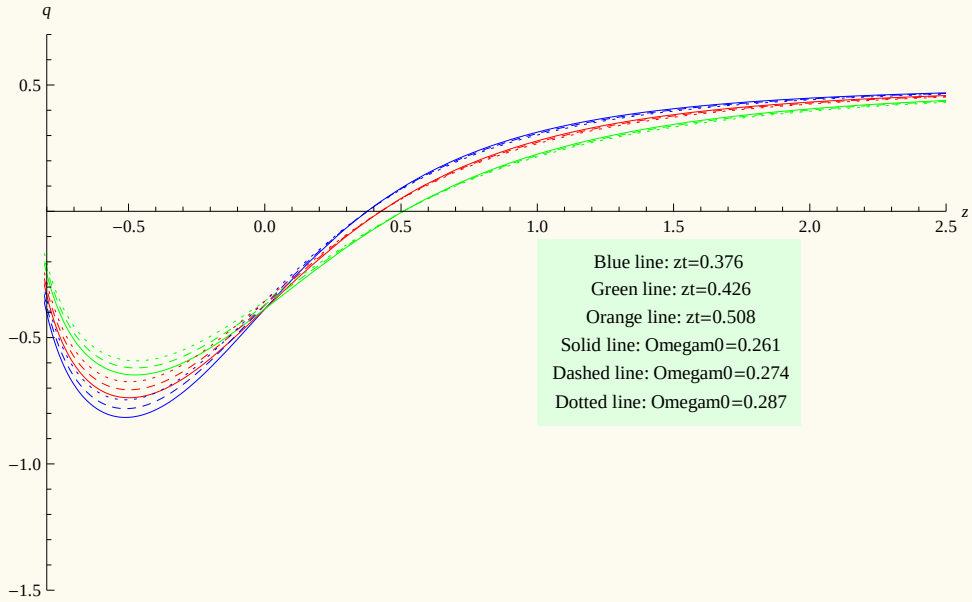
$Q_c=\xi H \rho_d$, CPL−Quintessence {−0.8,−0.05}: Deceleration ~ Redshift



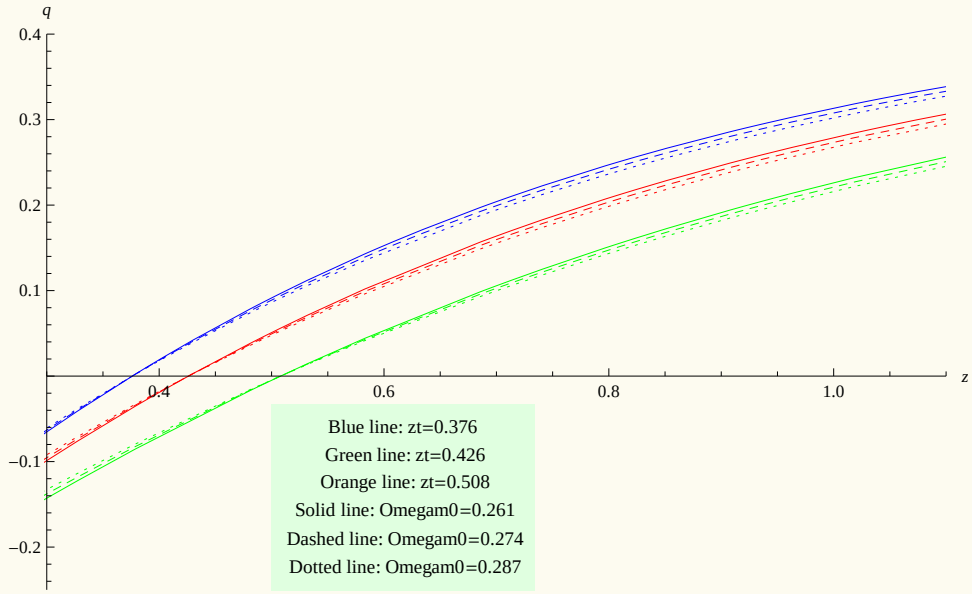
```
Grid[{{tabξvwExamI2CCPL2c}, {pldecI2CCPLShowSum2c}}]
```

ξ results for $Q_c=\xi H \rho_d$, CPL,Quintessence.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−0.8, −0.1, 0.261}	−0.840022	−0.657437	−0.434977
{−0.8, −0.1, 0.274}	−0.769916	−0.592747	−0.376815
{−0.8, −0.1, 0.287}	−0.698756	−0.527108	−0.31783

$Q_c=\xi H \rho_d$, CPL−Quintessence {−0.8,−0.1}: Deceleration ~ Redshift



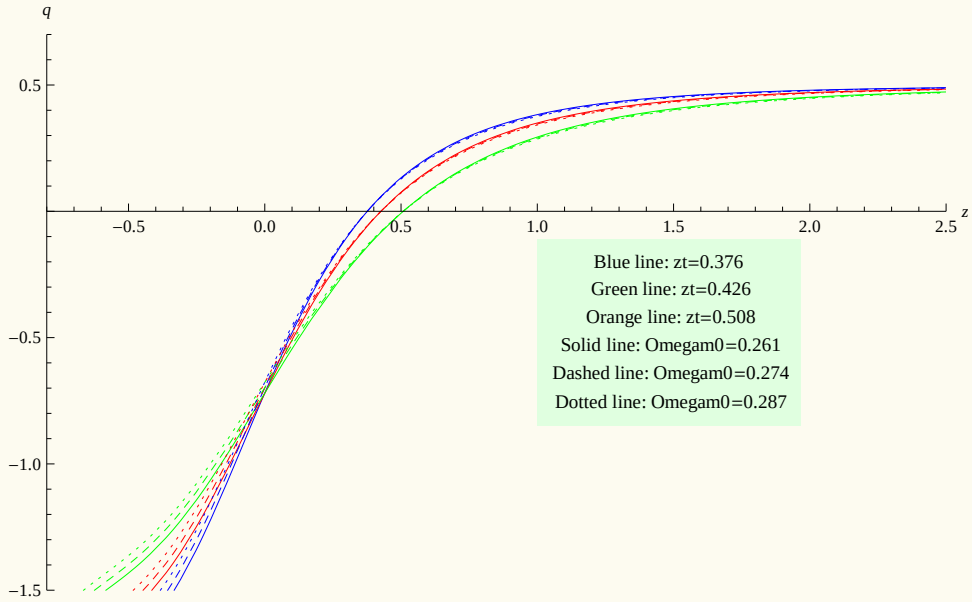
$Q_c=\xi H \rho_d$, CPL−Quintessence {−0.8,−0.1}: Deceleration ~ Redshift



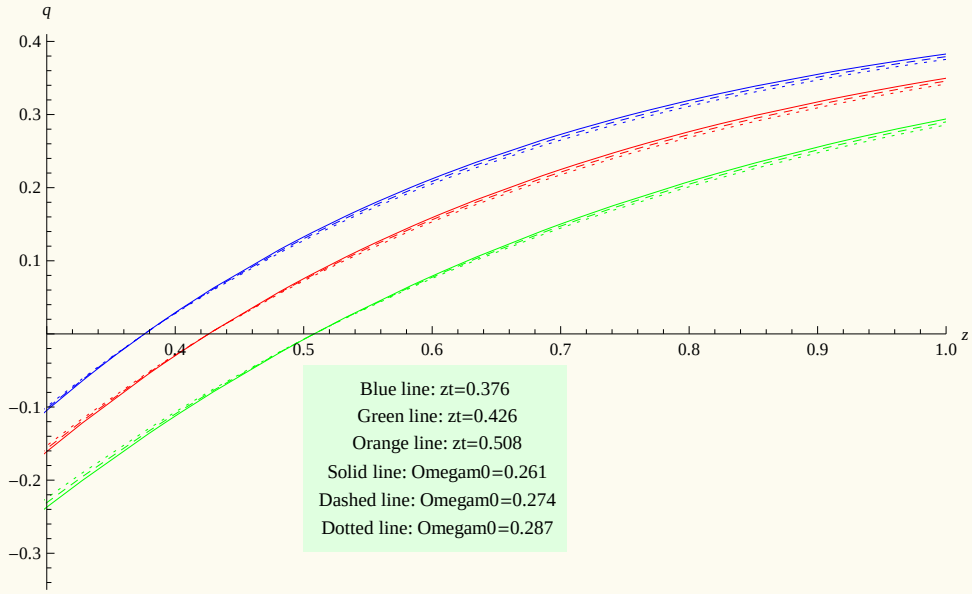
```
Grid[{{tabξvwExamI2CCPL3a}, {pldecI2CCPLShowSum3a}}]
```

ξ results for $Q_c=\xi H \rho_d$, CPL,Phantom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{-1.1, 0.05, 0.261}	-1.15043	-0.879158	-0.552233
{-1.1, 0.05, 0.274}	-1.07597	-0.809988	-0.489392
{-1.1, 0.05, 0.287}	-1.00046	-0.739874	-0.425738

$Q_c=\xi H \rho_d$, CPL−Phantom {−1.1,0.05}: Deceleration ~ Redshift



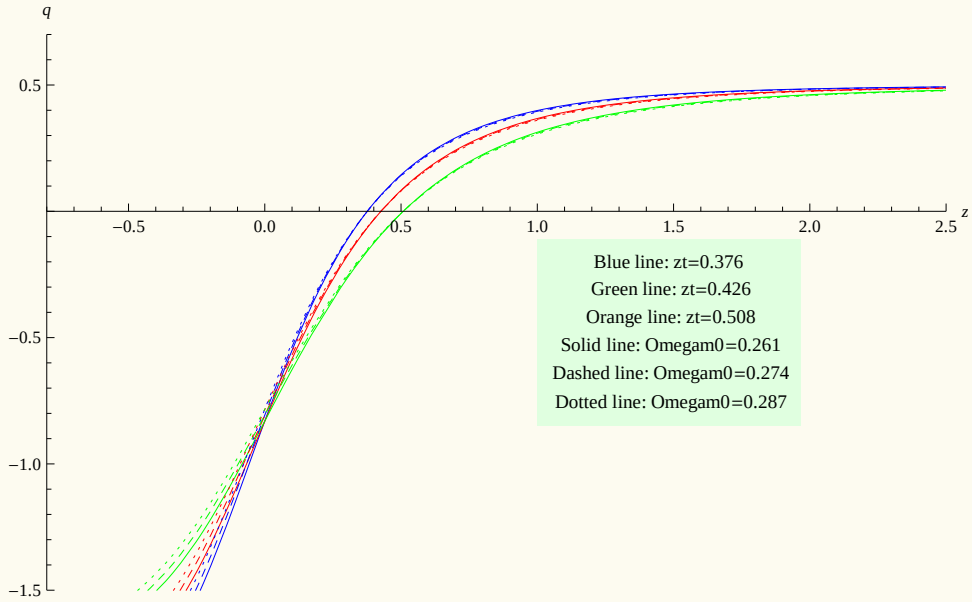
$Q_c=\xi H \rho_d$, CPL−Phantom {−1.1,0.05}: Deceleration ~ Redshift



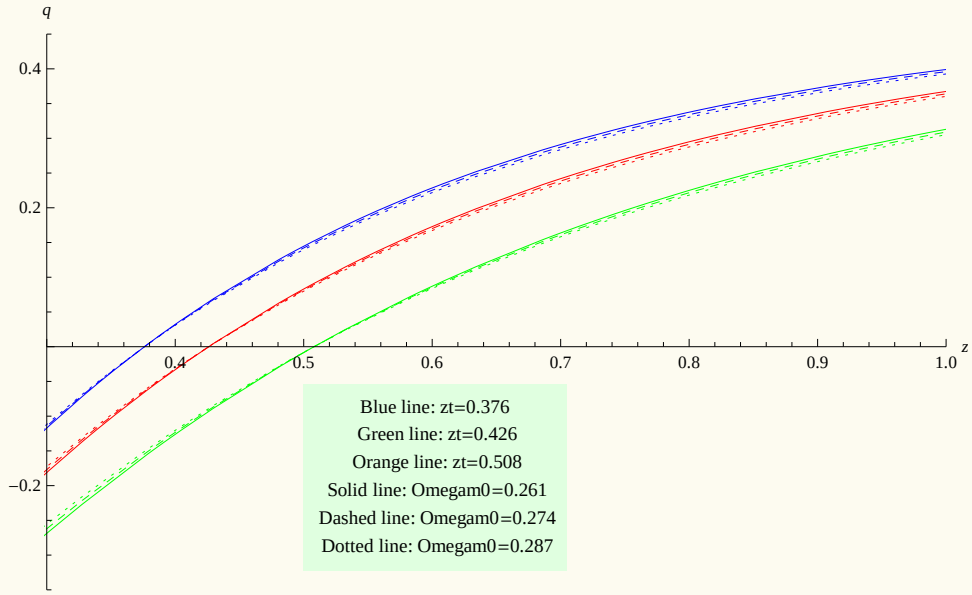
Grid[{{tabξvwExamI2CCPL3b}, {pldecI2CCPLShowSum3b}}]

ξ results for $Q_c=\xi$ H ρ_d, CPL,Phantom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−1.2, 0.05, 0.261}	−1.22317	−0.926083	−0.568337
{−1.2, 0.05, 0.274}	−1.14721	−0.85536	−0.50385
{−1.2, 0.05, 0.287}	−1.07021	−0.783697	−0.438556

$Q_c=\xi$ H ρ_d, CPL−Phantom {−1.2,0.05}: Deceleration ~ Redshift



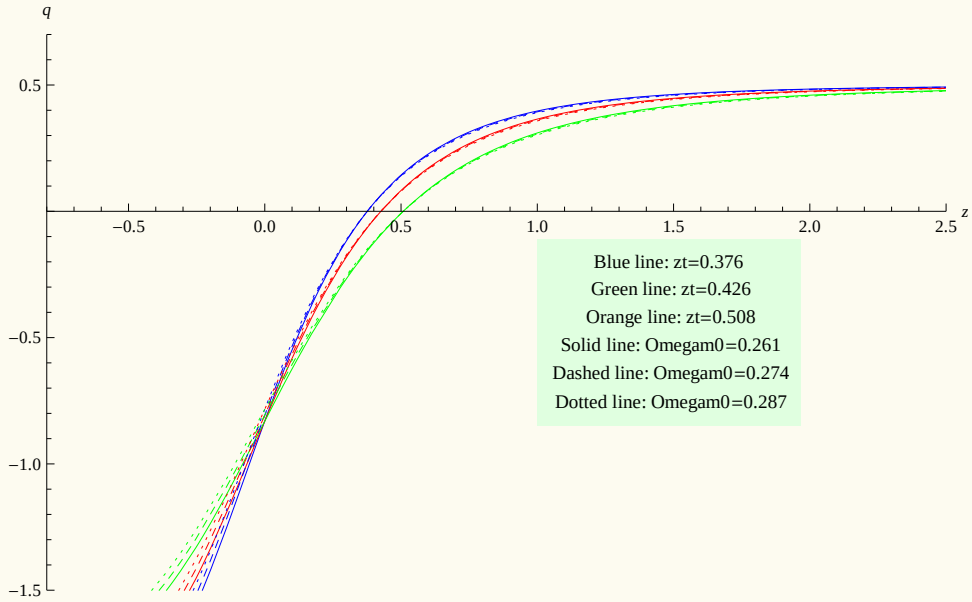
$Q_c=\xi$ H ρ_d, CPL−Phantom {−1.2,0.05}: Deceleration ~ Redshift



Grid[{{tabξvwExamI2CCPL3c}, {pldecI2CCPLShowSum3c}}]

ξ results for $Q_c=\xi H \rho_d$, CPL,Phantom.			
{w0,w1,Ωm0}	zt=0.376	zt=0.426	zt=0.508
{−1.2, 0.1, 0.261}	−1.20601	−0.911071	−0.556464
{−1.2, 0.1, 0.274}	−1.13009	−0.840383	−0.492025
{−1.2, 0.1, 0.287}	−1.05311	−0.768756	−0.426781

$Q_c=\xi H \rho_d$, CPL−Phantom {−1.2,0.1}: Deceleration ~ Redshift



$Q_c=\xi H \rho_d$, CPL−Phantom {−1.2,0.1}: Deceleration ~ Redshift