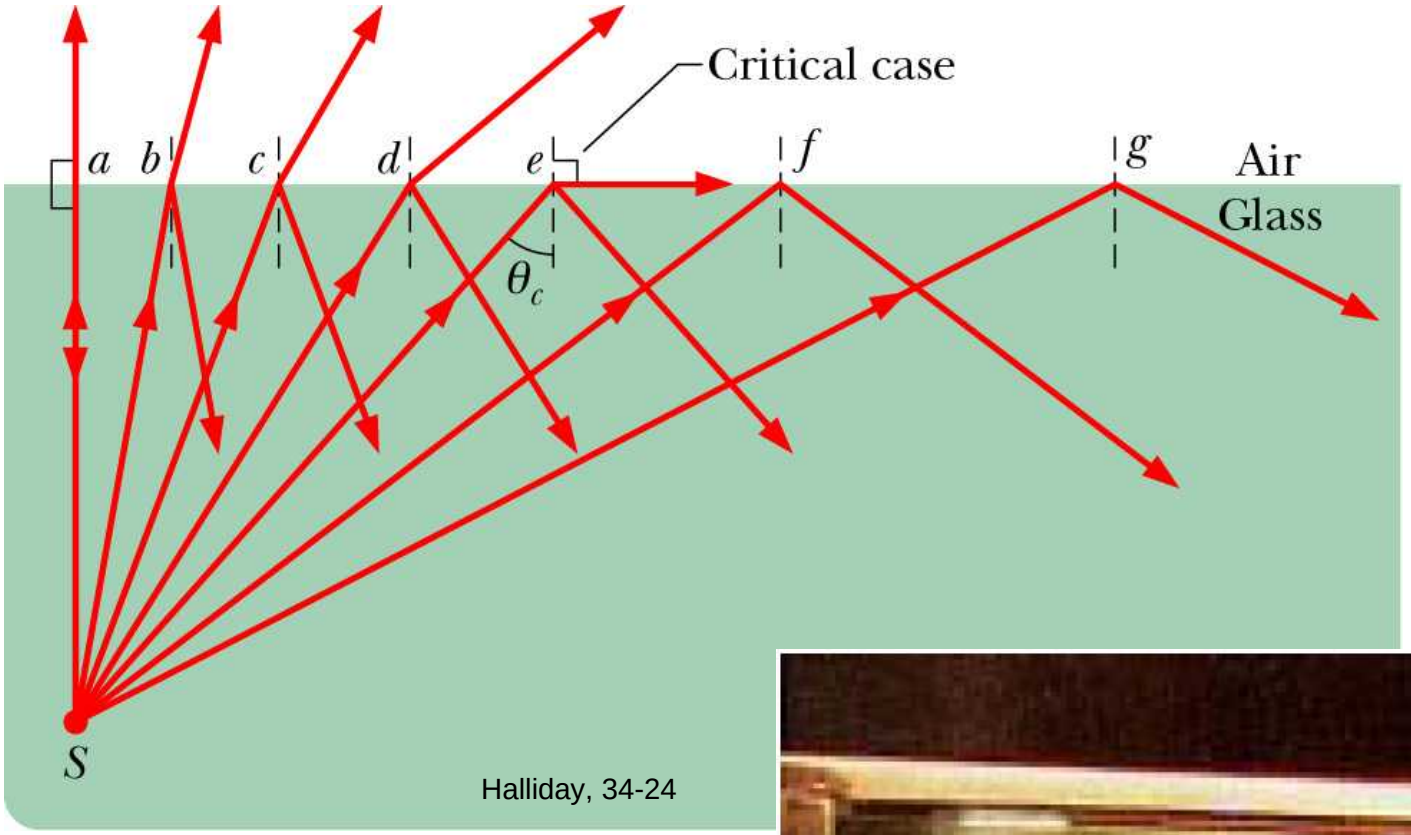
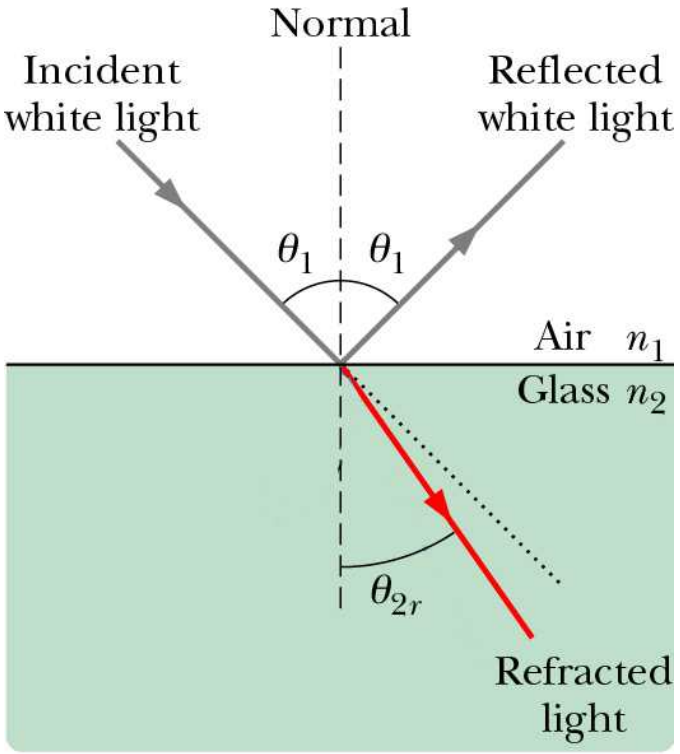
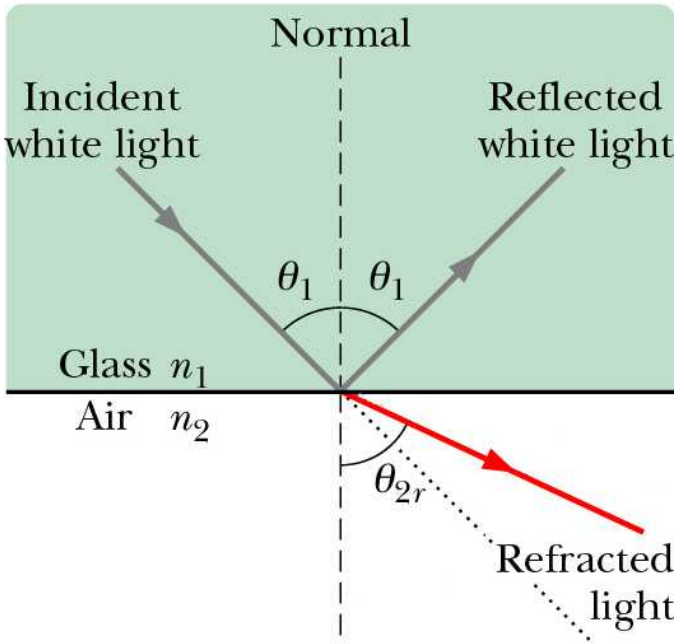


Halliday, 34-24





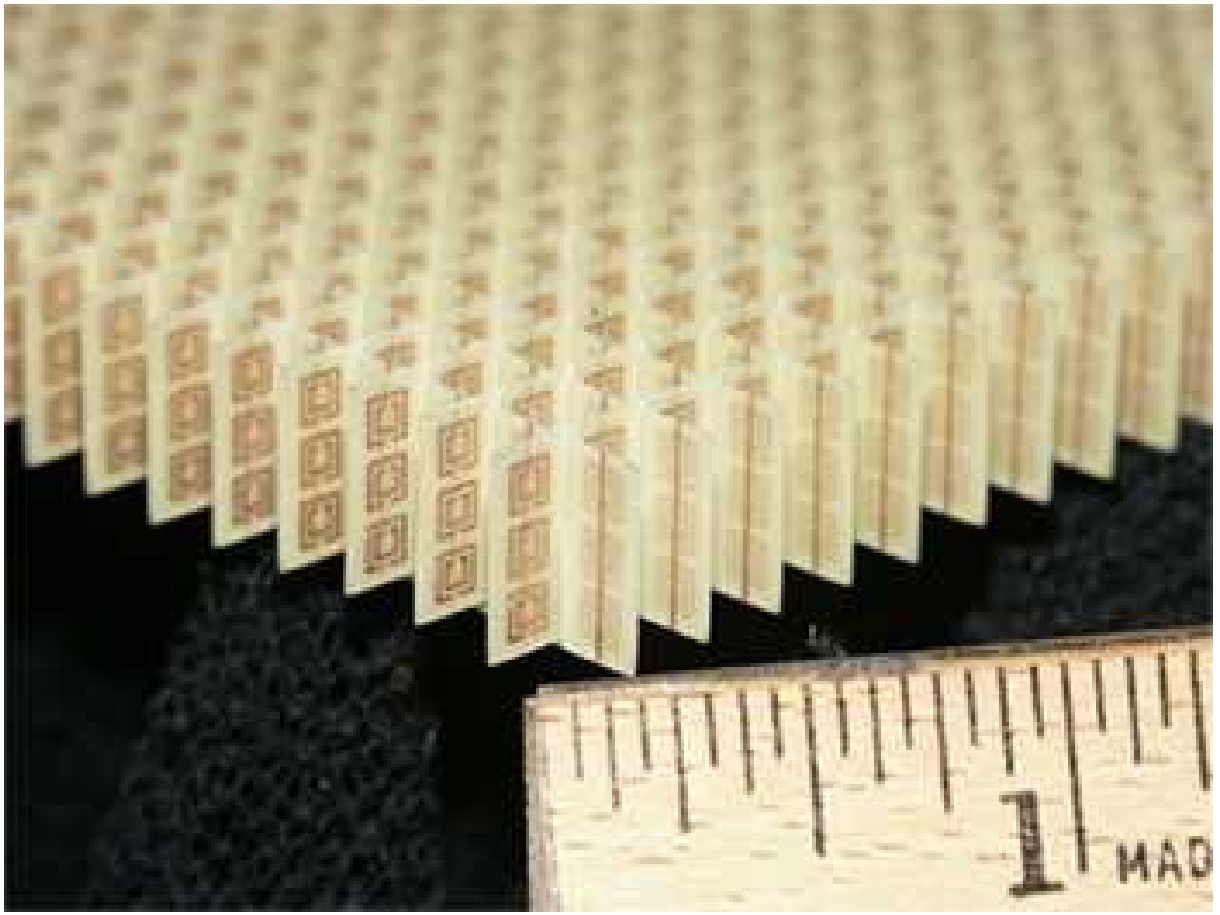
modif. Halliday, 34-20

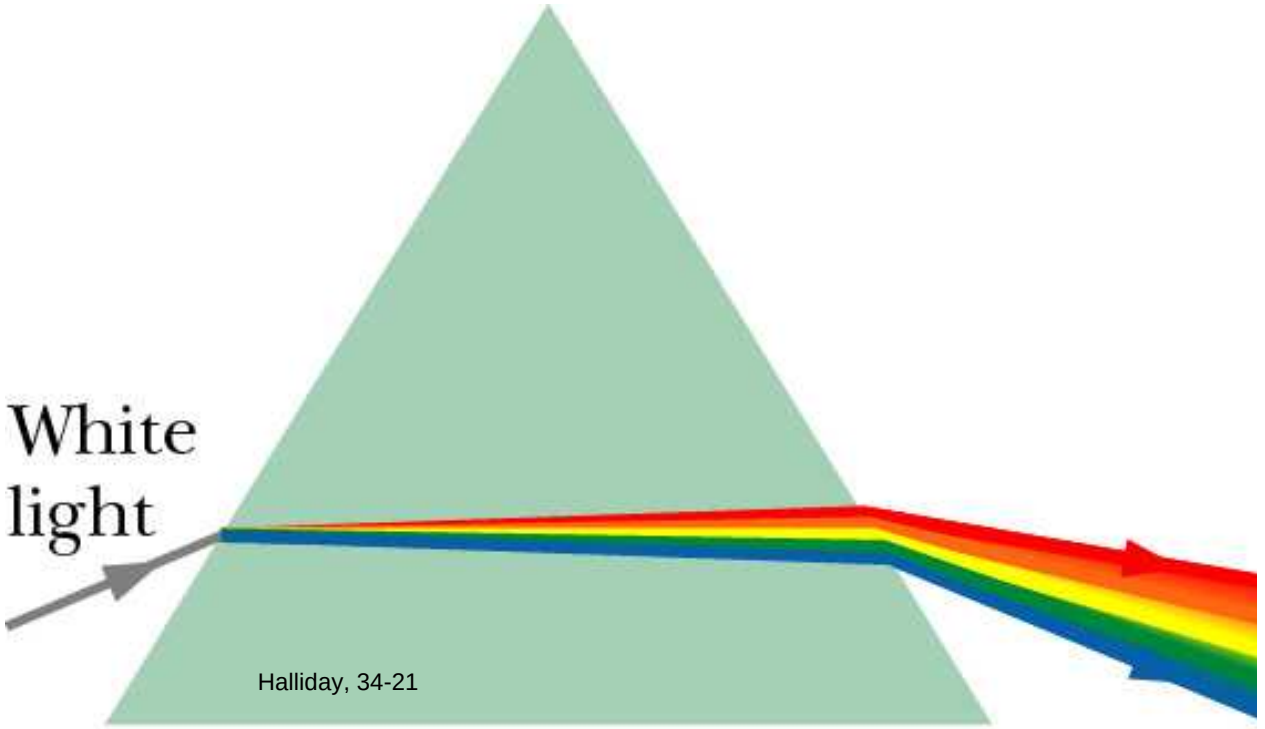
Tabelle 9.1. Brechzahlen einiger Stoffe bei 20° C für $\lambda = 589$ nm

Substanz	n
Luft von 1013 mbar	1,000272
Wasser	1,333
Benzol	1,501
Schwefelkohlenstoff	1,628
Diamant	2,417
Steinsalz	1,544
Kronglas (BK 1)	1,510
Flintglas (F 3)	1,613

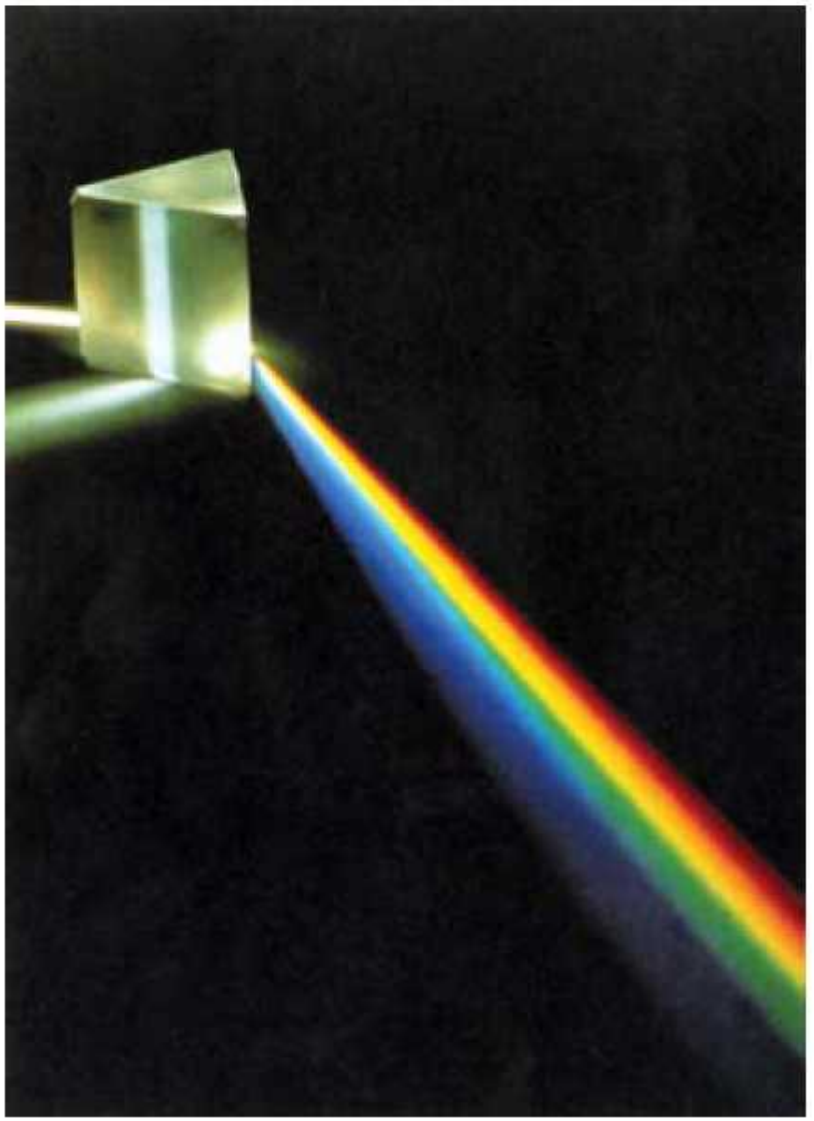
Metamaterialien - Negative Brechzahlen

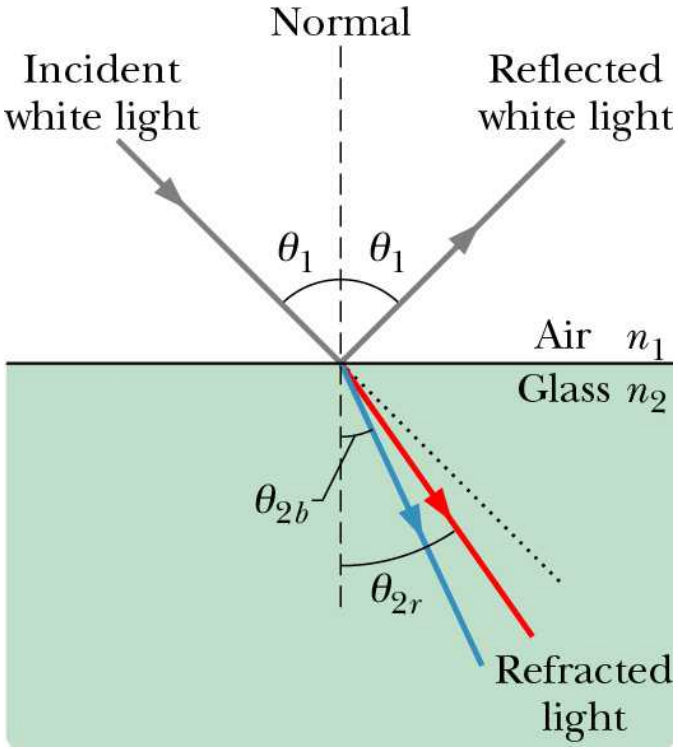
J. B. Pendry: Negative Refraction Makes a Perfect Lens Phys. Rev. Lett. **85**, 3966 (2000)

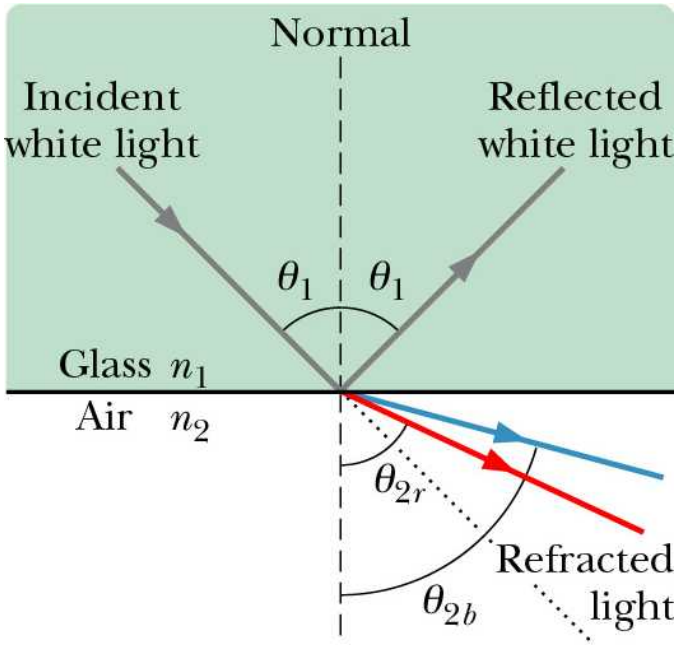




Halliday, 34-21







Halliday, 34-20

Dispersion

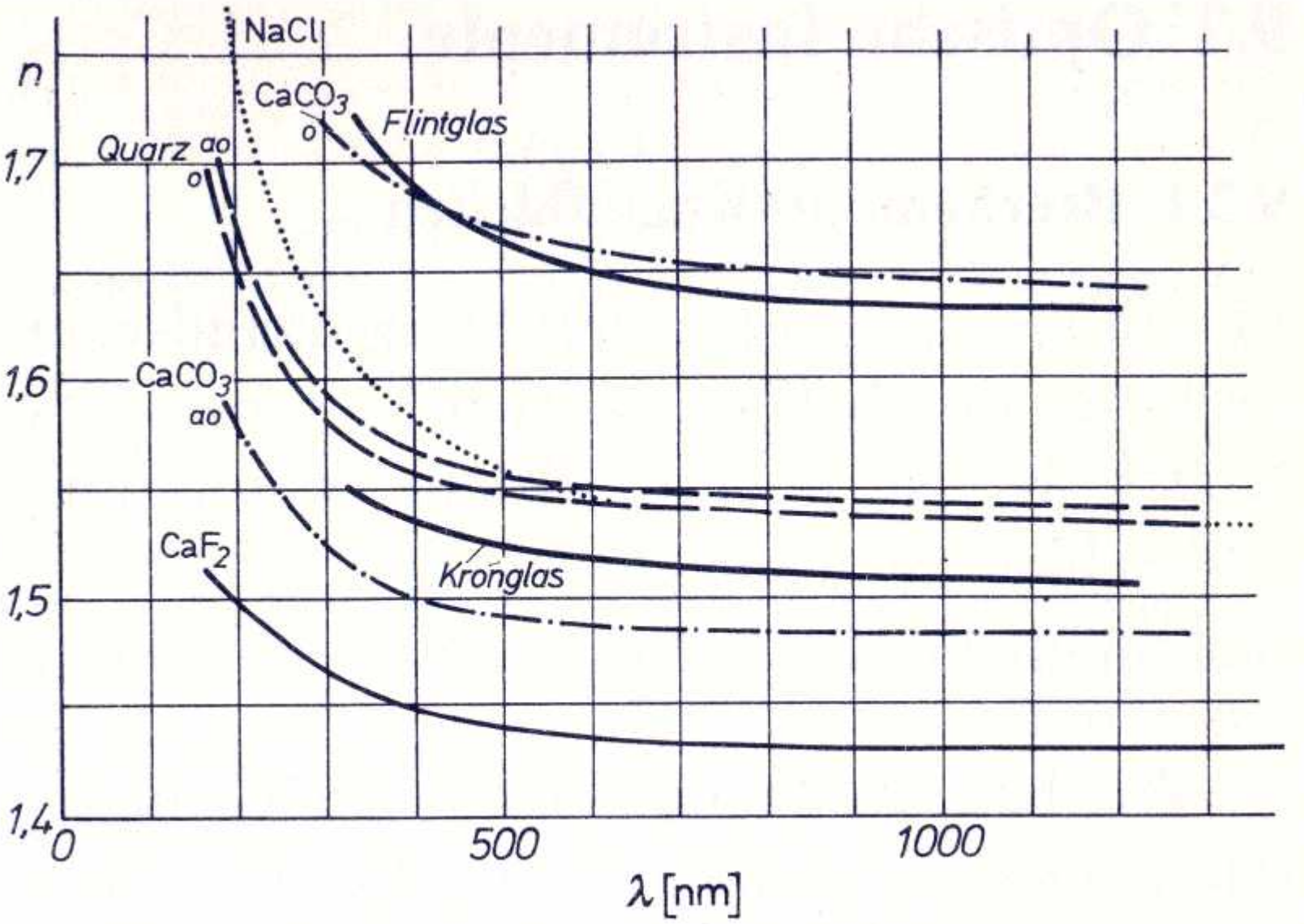
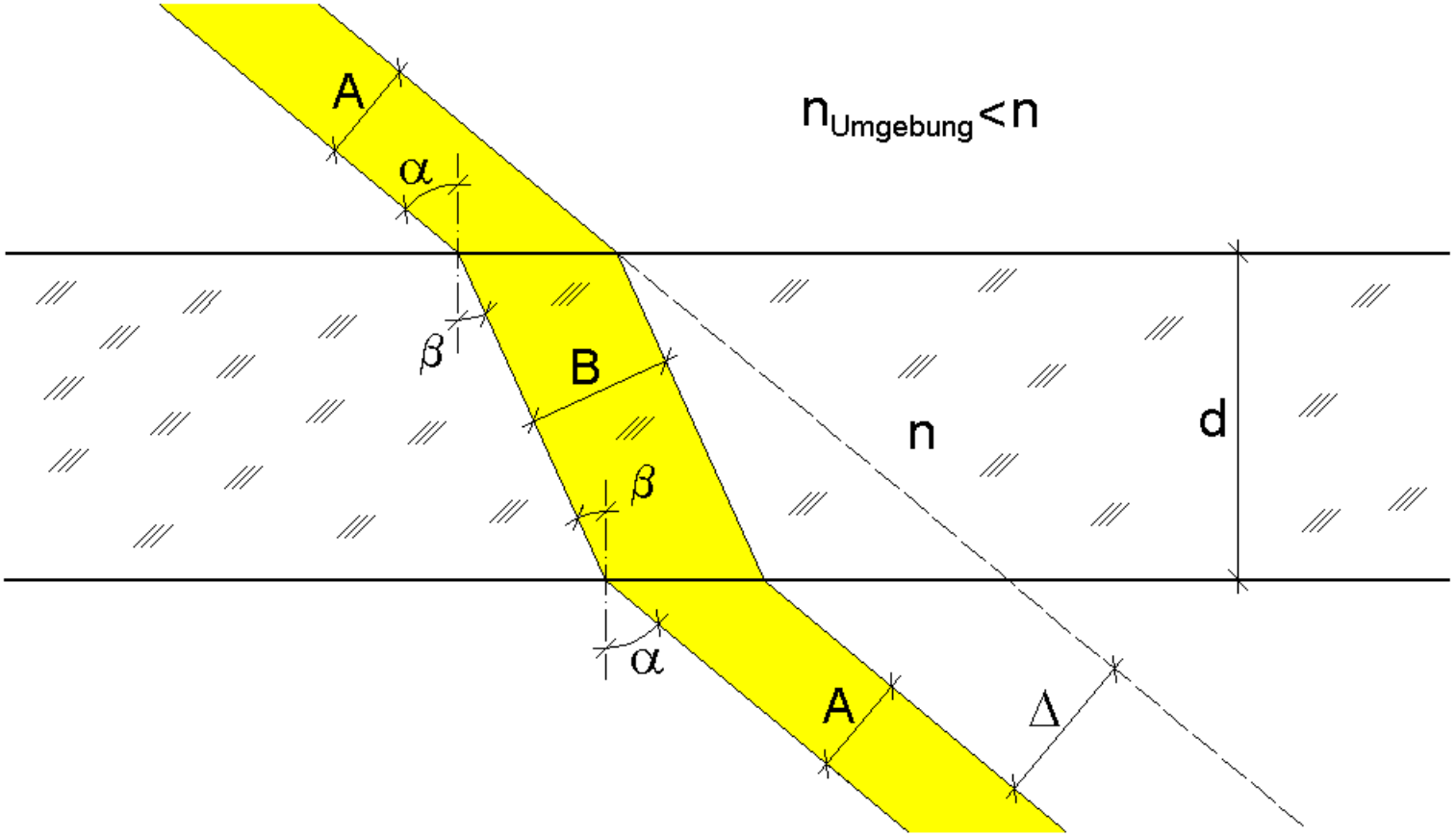
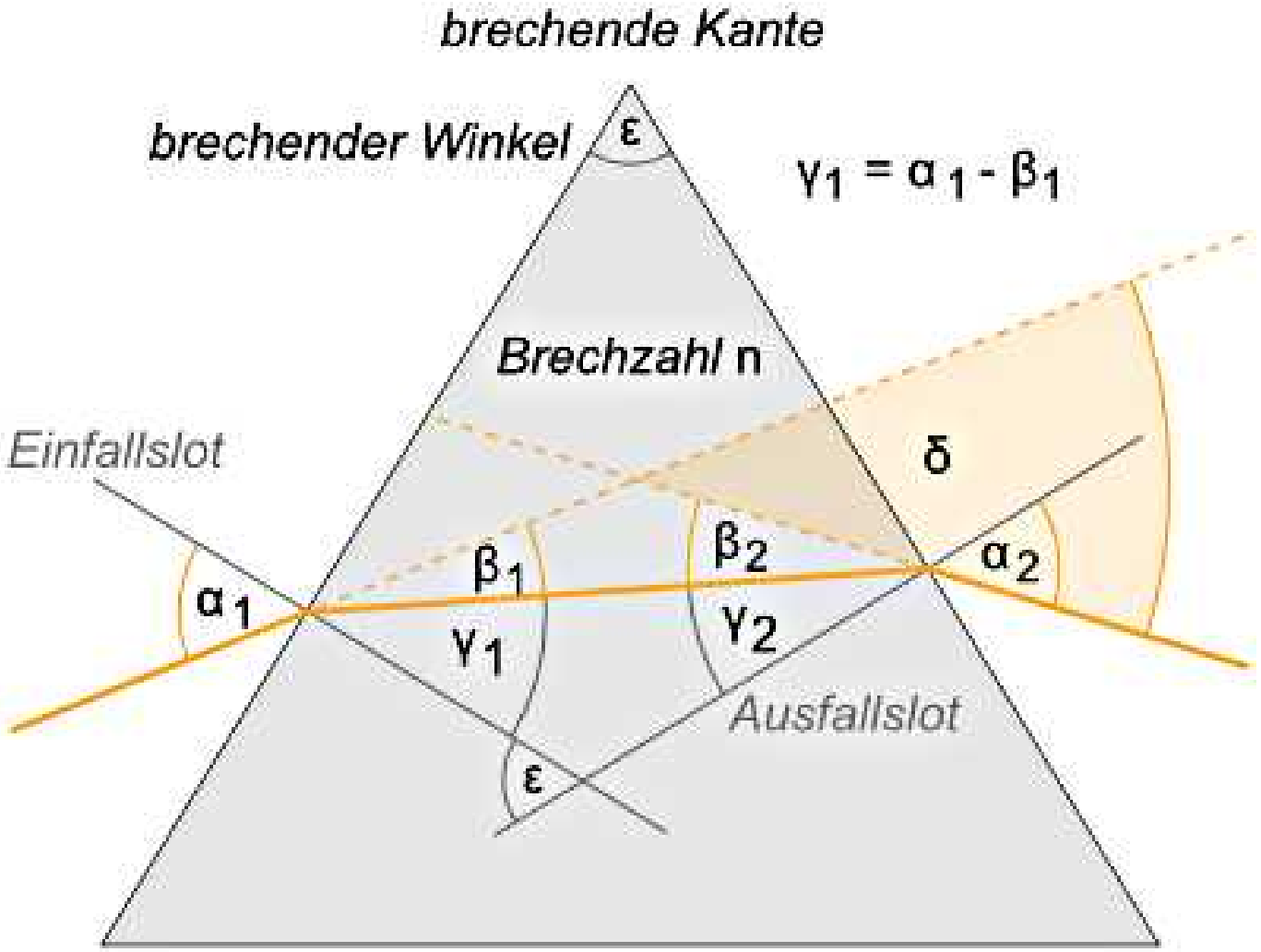


Abb. 9.22. Dispersionskurven $n(\lambda)$ für verschiedene Prismenmaterialien

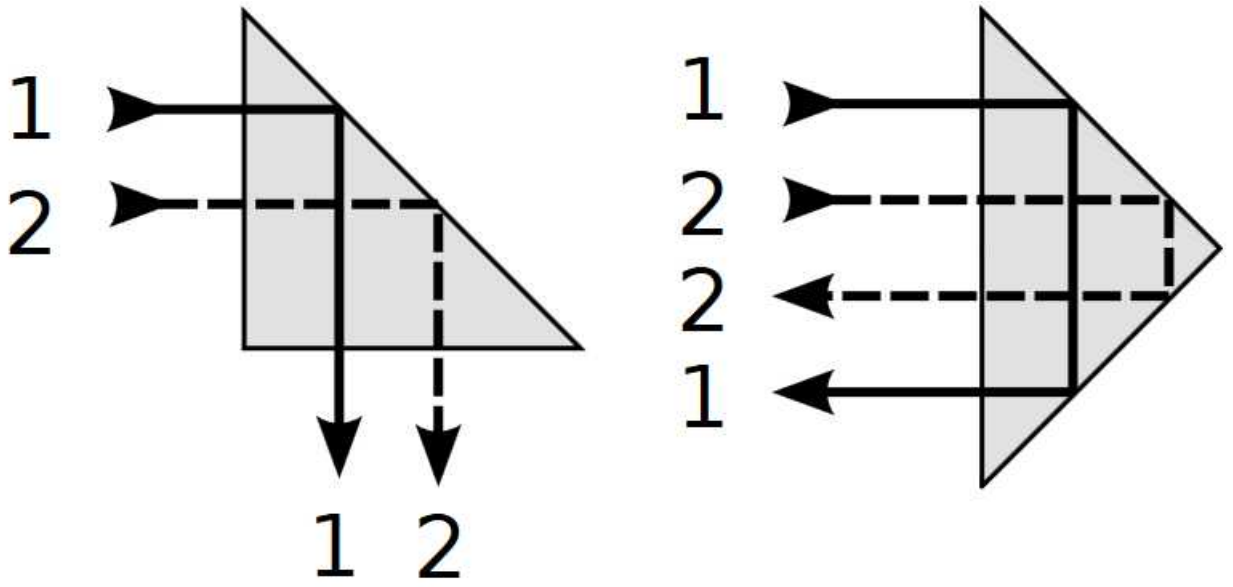
Planparallele Platte



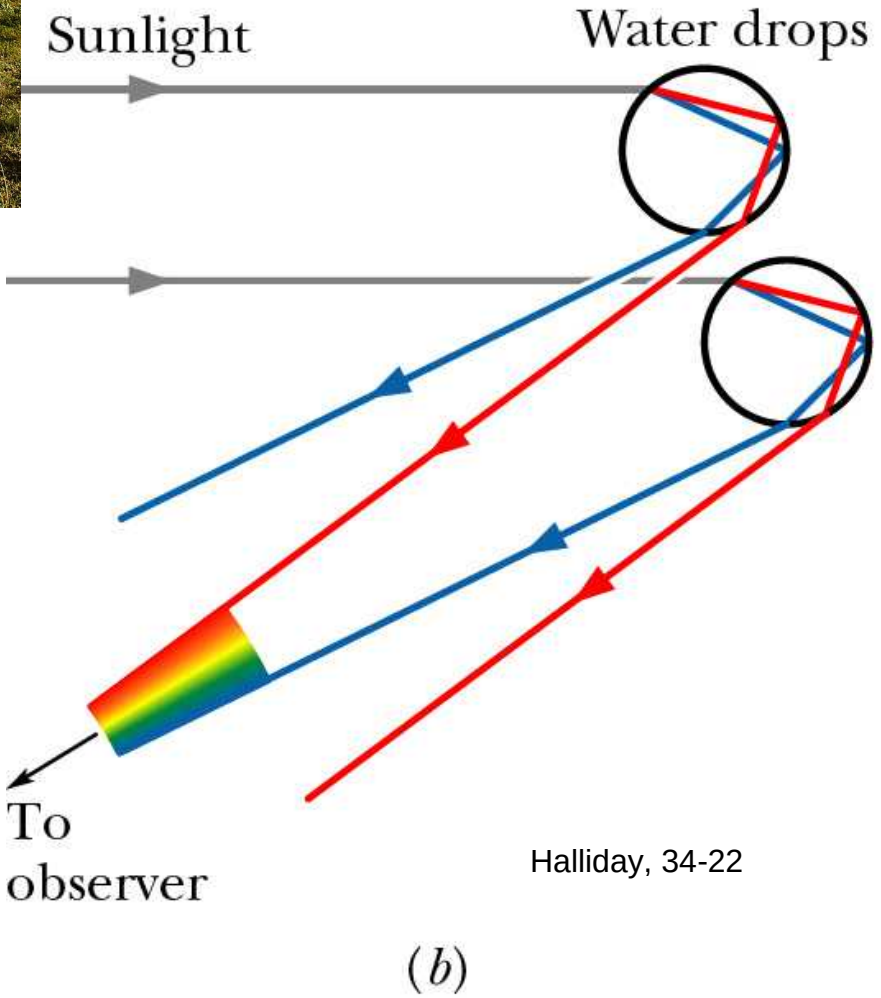


Ablenkung δ minimal bei symmetrischem Strahlengang ($\alpha_1 = \alpha_2$)

Umlenk und Umkehrprisma

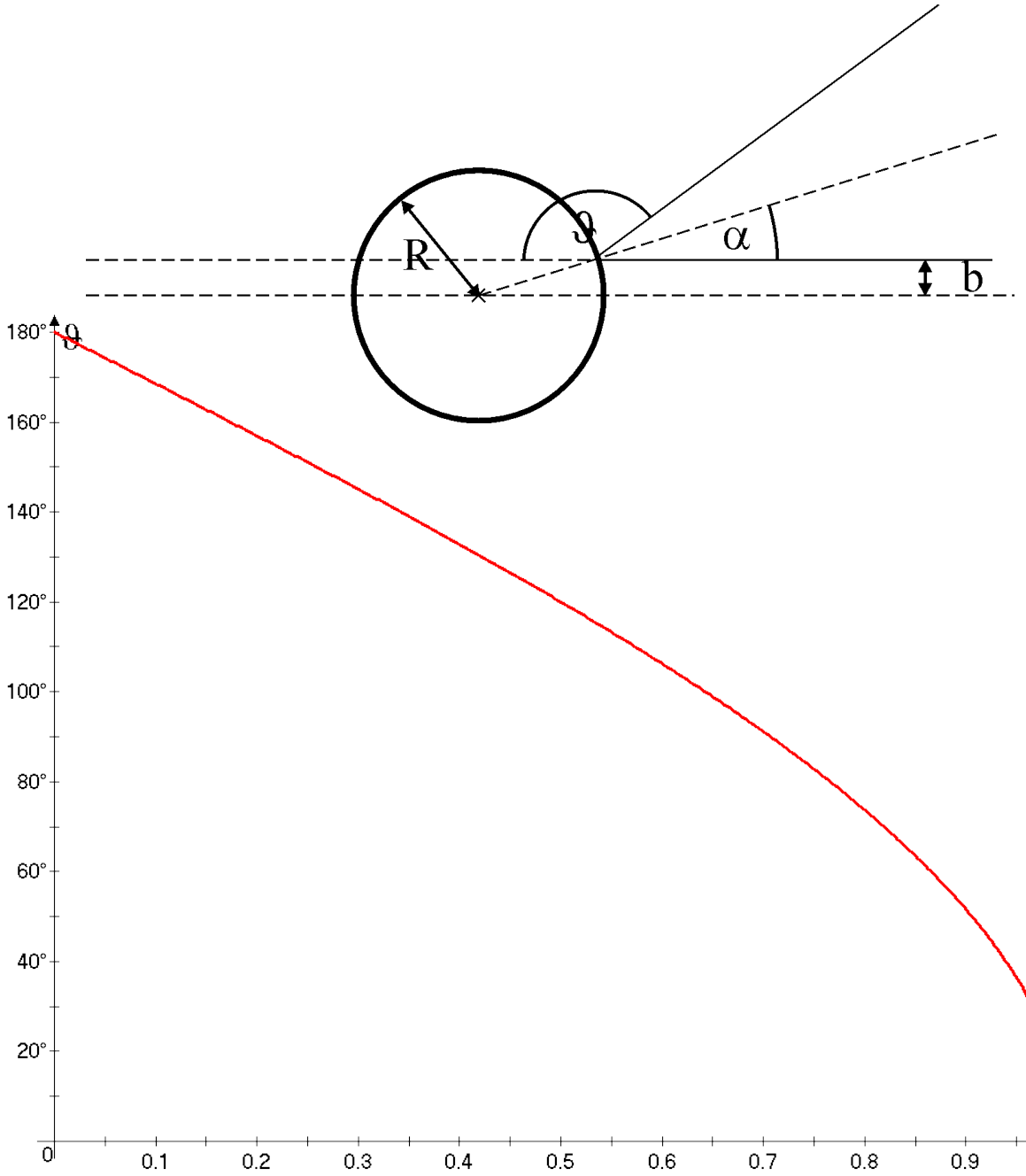


Wikipedia



Halliday, 34-22

was ist mit anderen Stoßparametern ??

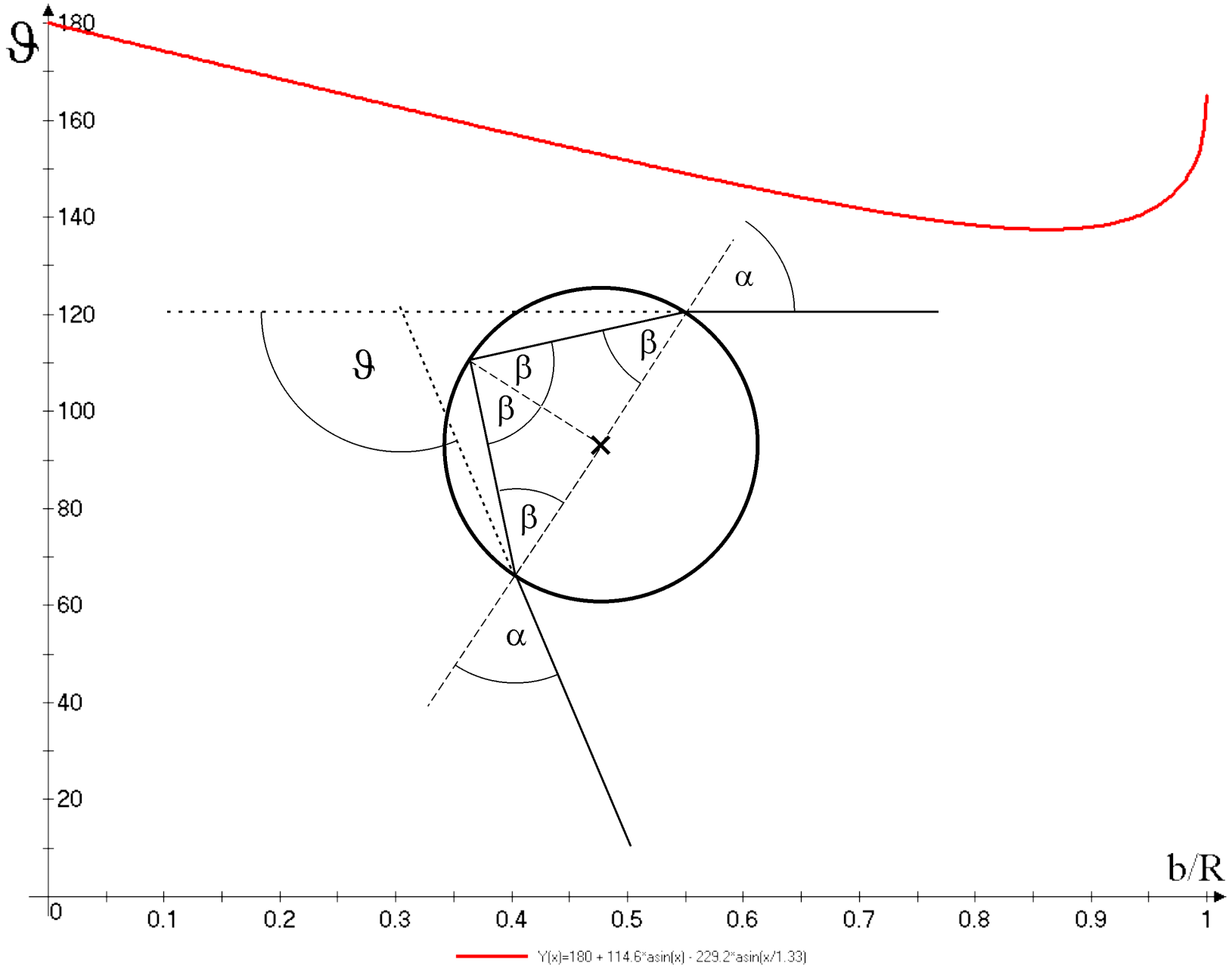


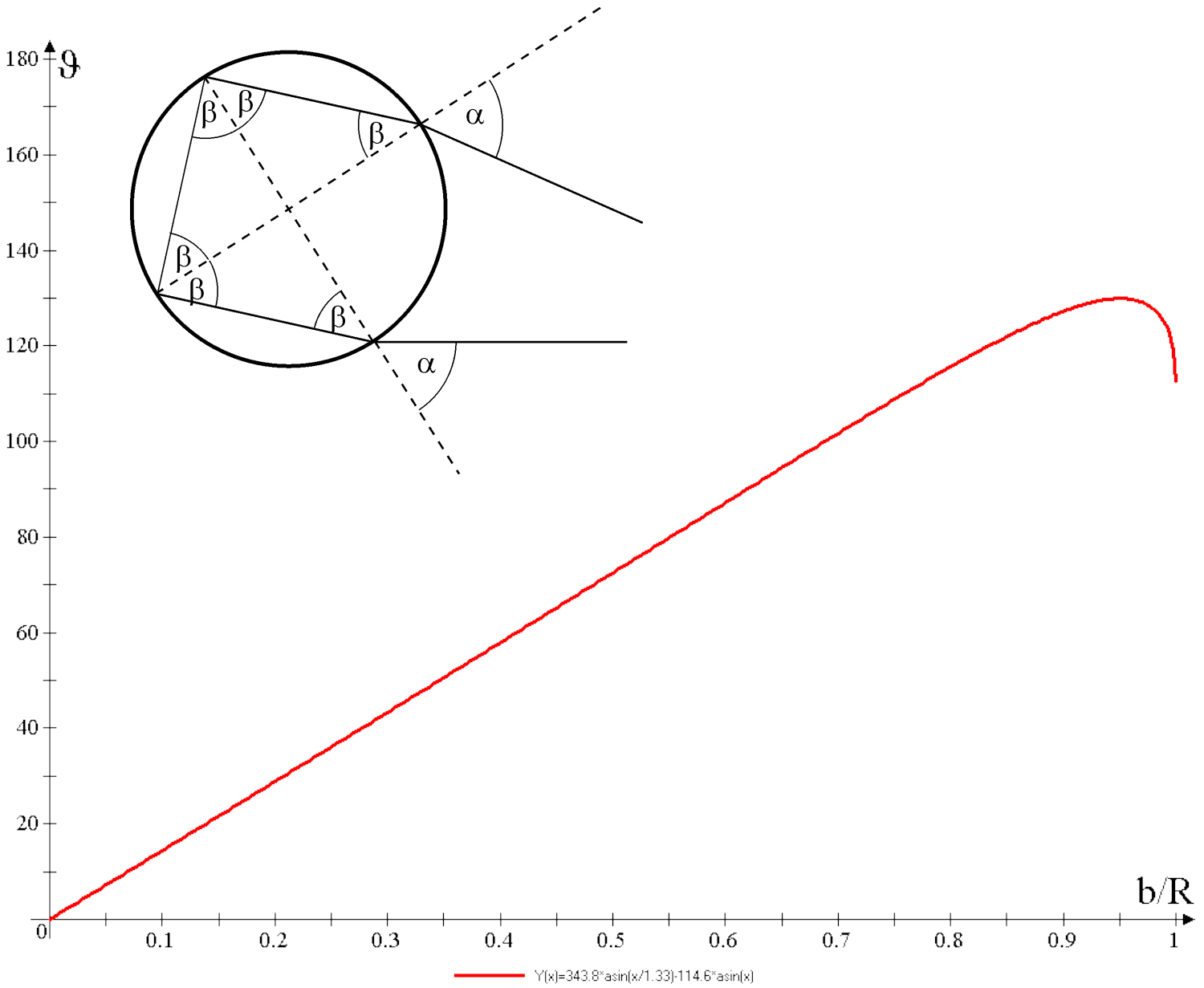
Ablenkwinkel θ

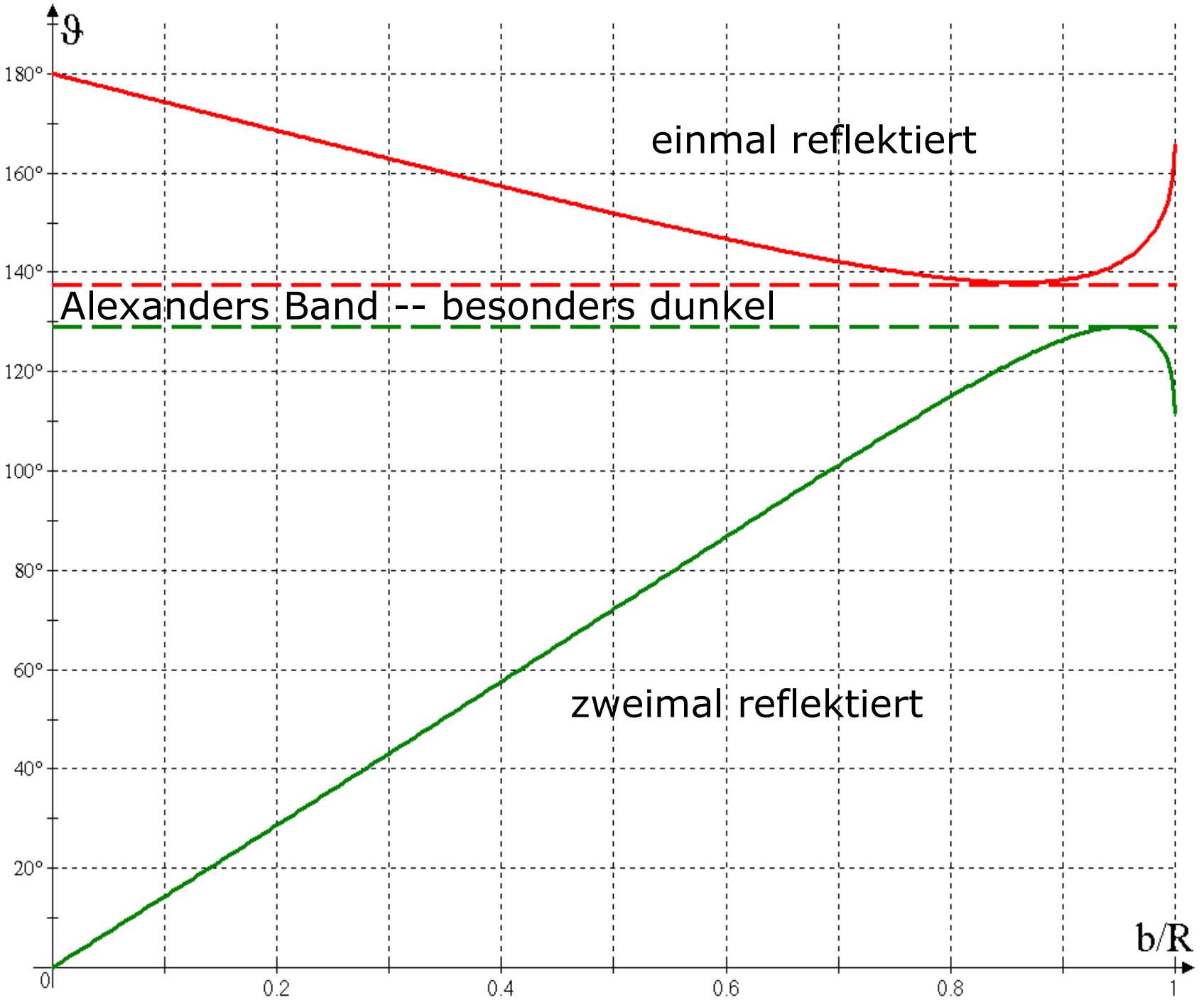
Stoßparameter b

Ablenkfunktion θ(b,λ)

n.b. $dA = 2 \pi b \, db$

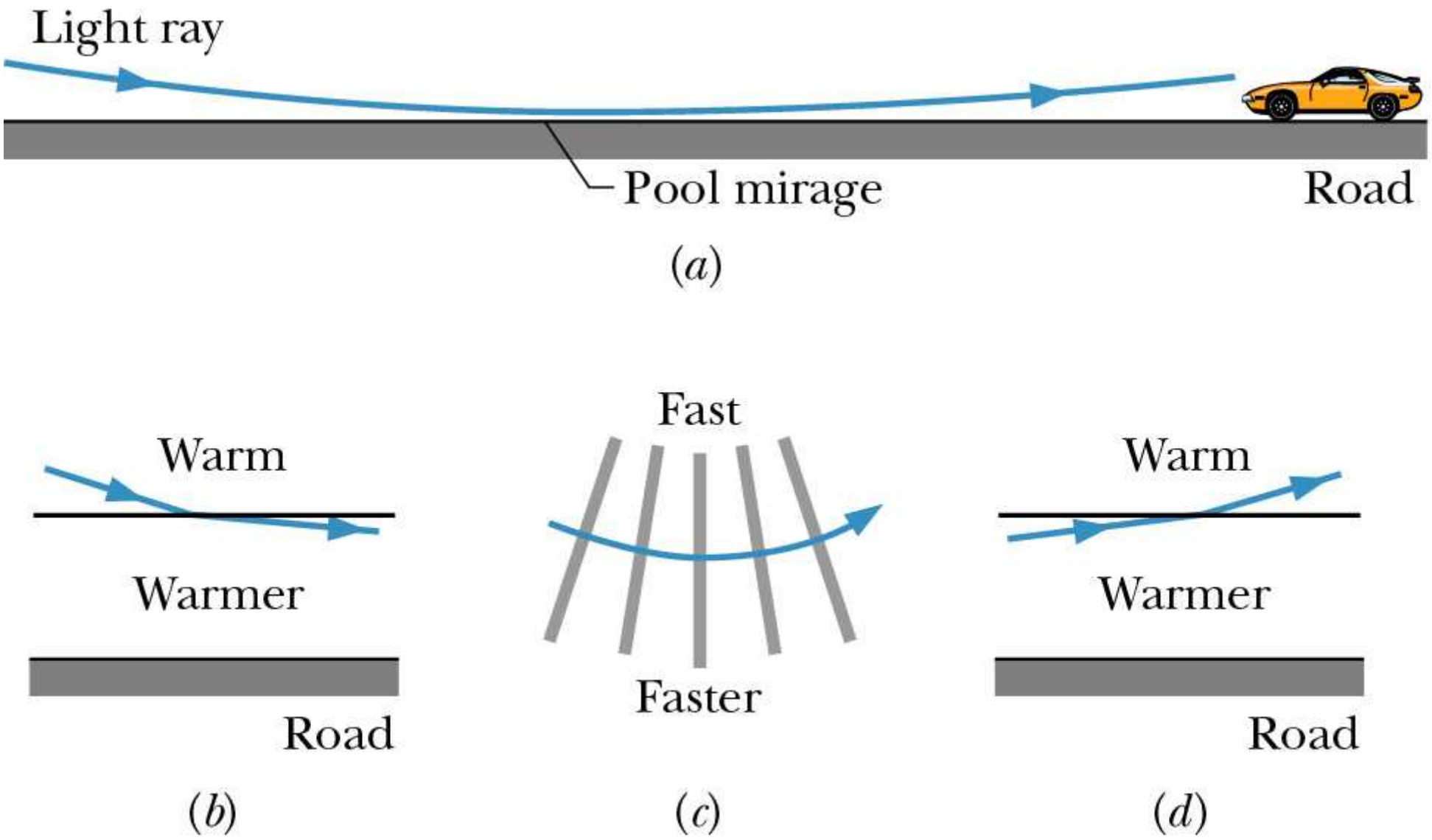

ϑ
180
160
140
120
100
80
60
40
20
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
b/R
α
β
β
β
β
ϑ
α
Y(x)=180 + 114.6*asin(x) - 229.2*asin(x/1.33)


ϑ
180
160
140
120
100
80
60
40
20
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
b/R
β
β
β
β
β
α
α
Y(x)=343.8*asin(x/1.33)-114.6*asin(x)


ϑ
180°
160°
140°
120°
100°
80°
60°
40°
20°
0
0.2
0.4
0.6
0.8
1
b/R
einmal reflektiert
Alexanders Band -- besonders dunkel
zweimal reflektiert

Mirage (Fata Morgana) at Norwegian coast

elsewhere


Light ray
Pool mirage
Road
(a)
Warm
Warmer
Road
(b)
Fast
Faster
(c)
Warm
Warmer
Road
(d)