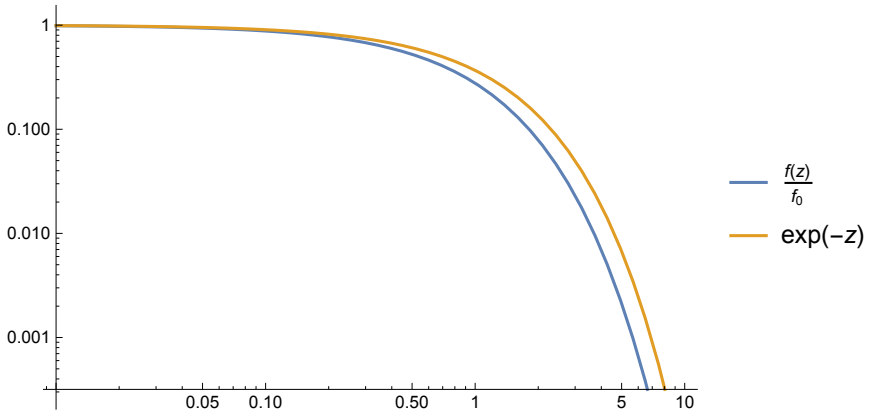
The Integrand in 3 Dimensions:

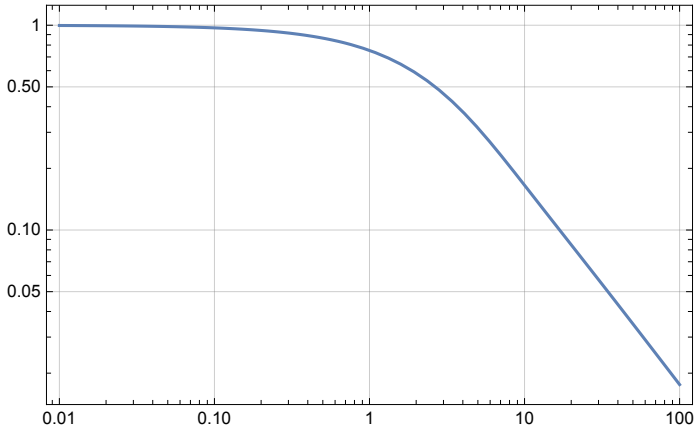
```
In[•]:= x[k_, l_] := k * l

In[•]:= R_x_[θ_] := ((1.334 * E^(-x / Cos[θ])) * Cos[θ]) / (1 - 1.334^2 * (Sin[θ])^2)^(1/2)

In[•]:= f[z_] := NIntegrate[2 * Pi * Sin[θ] * R_z[θ], {θ, 0, ArcSin[1 / 1.334]}] / (2 * Pi)

In[•]:= f_0 = f[0]
Out[•]= 0.749625

In[•]:= LogLogPlot[{f[z] / f_0, Exp[-z]}, {z, 0.01, 10}, PlotLegends → "Expressions"]
```

Out[•]=




```
In[•]:= LogLogPlot[(f[z] / f_0) / Exp[-z], {z, 0.01, 100}, Frame → True, GridLines → Automatic]
```

Out[•]=




```
In[•]:= a = Series[Cos[x], {x, 0, 6}]
```

Out[•]= $1 - \frac{x^2}{2} + \frac{x^4}{24} - \frac{x^6}{720} + O[x]^7$

```
In[•]:= b = Series[Sin[x], {x, 0, 7}]
```

Out[•]= $x - \frac{x^3}{6} + \frac{x^5}{120} - \frac{x^7}{5040} + O[x]^8$

In[]:=
```
c = Series[Exp[Cos[x]], {x, 0, 7}]
```

Out[]=
$$e - \frac{e\,x^2}{2} + \frac{e\,x^4}{6} - \frac{31\,e\,x^6}{720} + O[x]^8$$

In[]:=
```
d = Exp[-1.334 / a]
```

Out[]=
$$0.263421 - 0.175702\,x^2 - 0.0146126\,x^4 + 0.00603081\,x^6 + O[x]^7$$

In[]:=
```
e = (1.334 * a)^2
```

Out[]=
$$1.77956 - 1.77956\,x^2 + 0.593185\,x^4 - 0.0790914\,x^6 + O[x]^7$$

In[]:=
```
integrand = (1.334 * Pi * a * b * d) / (1 - e)^0.5
```

Out[]=
$$\left(7.65621 \times 10^{-17} - 1.25035\,i\right) x + \left(1.60054 \times 10^{-16} + 0.240413\,i\right) x^3 + \left(3.51055 \times 10^{-16} - 0.717689\,i\right) x^5 + \left(7.57894 \times 10^{-16} - 1.15189\,i\right) x^7 + O[x]^8$$

In[]:=
```
CoefficientList[integrand, x]
```

Out[]=
$$\left\{0,\ 7.65621 \times 10^{-17} - 1.25035\,i,\ 0,\ 1.60054 \times 10^{-16} + 0.240413\,i,\ 0,\ 3.51055 \times 10^{-16} - 0.717689\,i,\ 0,\ 7.57894 \times 10^{-16} - 1.15189\,i\right\}$$

In[]:=
```
NIntegrate[(1.334 * Pi * a * b * d) / (1 - e)^0.5, {x, 0, ArcSin[1 / 1.334]}] / (2 * Pi)
```

NIntegrate: The integrand $(7.65621 \times 10^{-17} - 1.25035\,i)\,x + (1.60054 \times 10^{-16} + 0.240413\,i)\,x^3 + (3.51055 \times 10^{-16} - 0.717689\,i)\,x^5 + (7.57894 \times 10^{-16} - 1.15189\,i)\,x^7 + O[x]^8$ has evaluated to Overflow, Indeterminate, or Infinity for all sampling points in the region with boundaries {{0, 0.847496}}.

Out[]=
$$\frac{\text{NIntegrate}\left[\frac{1.334\,\pi\,a\,b\,d}{(1-e)^{0.5}},\ \left\{x,\ 0,\ \text{ArcSin}\left[\frac{1}{1.334}\right]\right\}\right]}{2\,\pi}$$