Scattering Kernels in Flatland

This is code to accompany the book:

A Hitchhiker's Guide to Multiple Scattering

www.eugenedeon.com/hitchhikers

Henyey Greenstein Generalization

[Davis 2006]

In[•]:=
```
pHGFlatland[u_, g_] := 1/(2 Pi) (1 - g^2)/(1 + g^2 - 2 g u)
```

In[•]:=
```
Integrate[Cos[t] pHGFlatland[Cos[t], g], {t, -Pi, Pi}, Assumptions → -1 < g < 1]
```

Out[•]=
```
ConditionalExpression[g, g ≠ 0]
```

In[•]:=
```
sampleHGFlatland[g_] := 2 ArcTan[(1 - g)/(1 + g) Tan[Pi/2 (1 - 2 RandomReal[])]]
```

In[•]:=
```
With[{g = 0.7},
 Show[
  Plot[pHGFlatland[Cos[t], g], {t, -Pi, Pi}, PlotRange → All],
  Histogram[
   Table[sampleHGFlatland[g], {i, Range[10 000]}]
   , 50, "PDF"]
 ]
]
```

Out[•]=