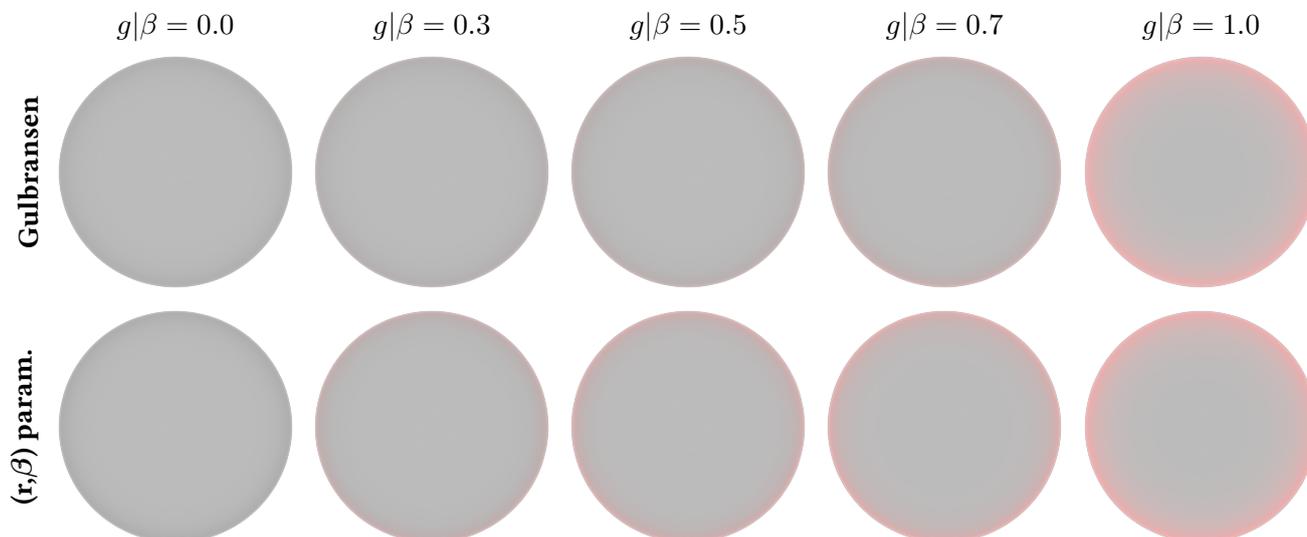


Bringing an Accurate Fresnel to Real-Time Rendering: Supplemental Material

Forewords. This document is the supplemental material of *Bringing an Accurate Fresnel to Real-Time Rendering: A Preintegrable Decomposition*. It contains additional validation results made using Mitsuba, an offline path tracer. We show here that our decomposition of Fresnel reflectances better match the ground truth than Schlick's decomposition.

1 Reparametrization of Edge-Tint

The following Figure compares Gulbrandsen's parametrization of metals (top row) to our linearization (bottom). In both cases, for a constant reflectivity ($r = 0.5$), we interpolate between a black edge tint $[0, 0, 0]$ and a red edge tint $[1, 0, 0]$.



2 Comparison with Ground Truth

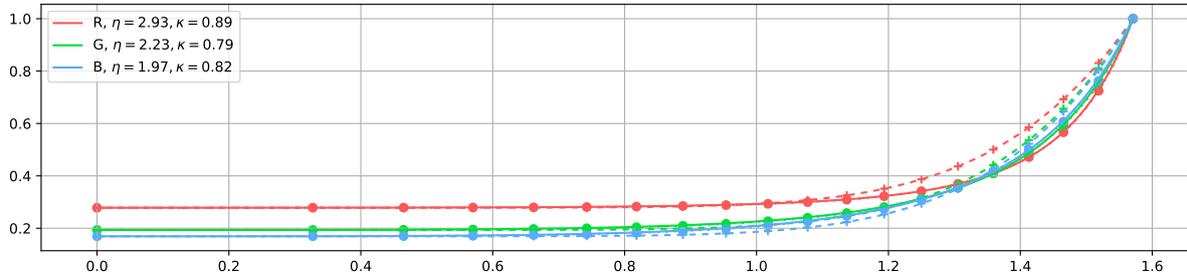
The following pages of this document showcase a different material used for comparison. We used the readily available complex index of refraction data provided by <http://refractiveindex.info>. Those data were averaged for each sensitivity curve to get an index per color channel.

For each material, we provide a plot of the three Fresnel reflectance curves and their approximations by our method, and Schlick's method. For better reading, the y -axis is clamped so that the curves fill the plot space. We also display rendering of those materials using a sphere with the Uffizi environment map and display the difference image using the ΔE difference.

a-C

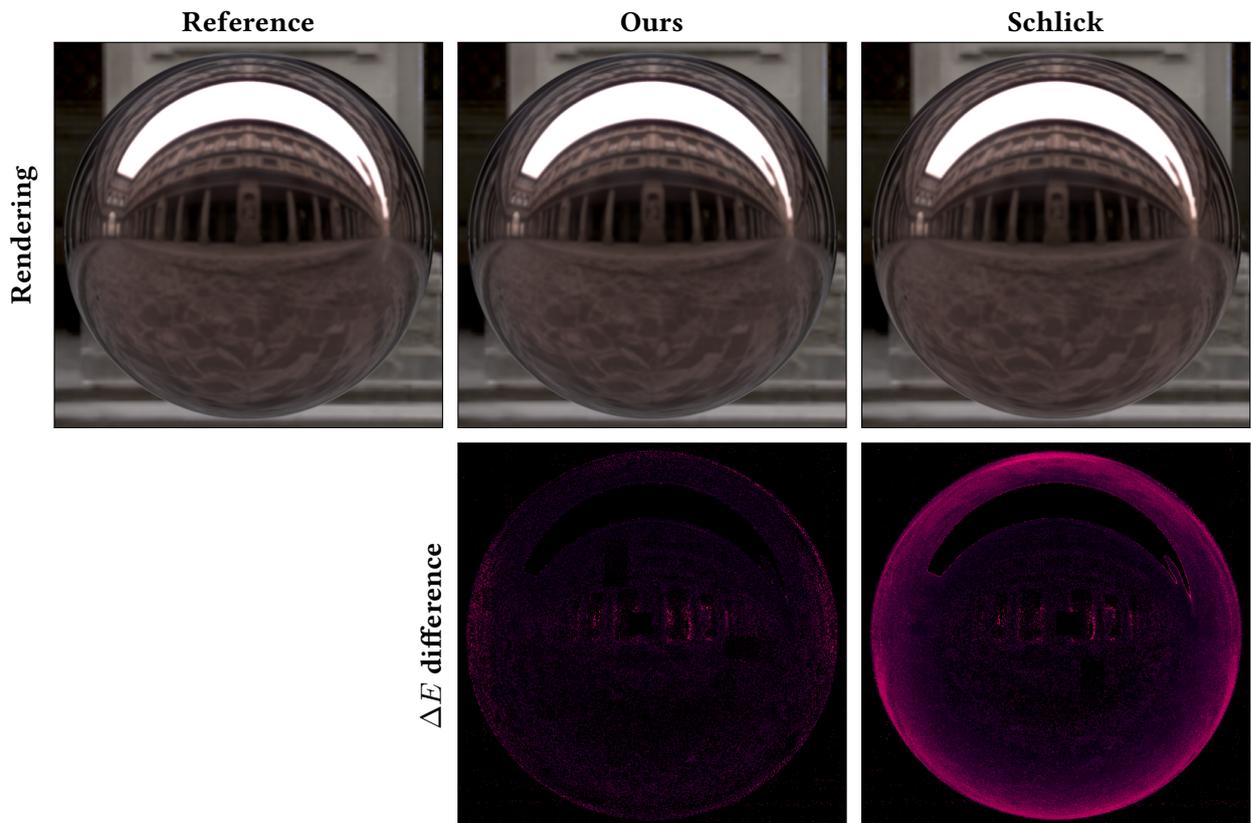
Graph

We display the analytical Fresnel curve in plain for the different η , κ per color channel (R, G, B) along our fitted decomposition (in dashed with dots) and compared to Schlick's Fresnel (in dashed with crosses).



Renderings

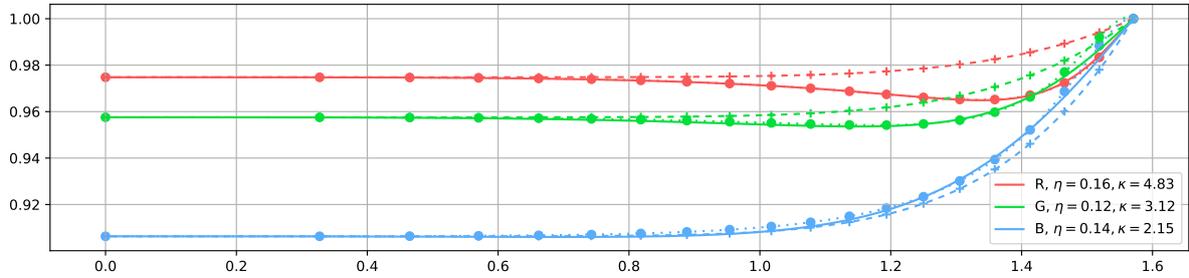
Those renderings were done in Mitsuba using the Uffizi environment and compare the reference Fresnel (left) our fitted decomposition (middle) and Schlick's Fresnel (right).



Ag

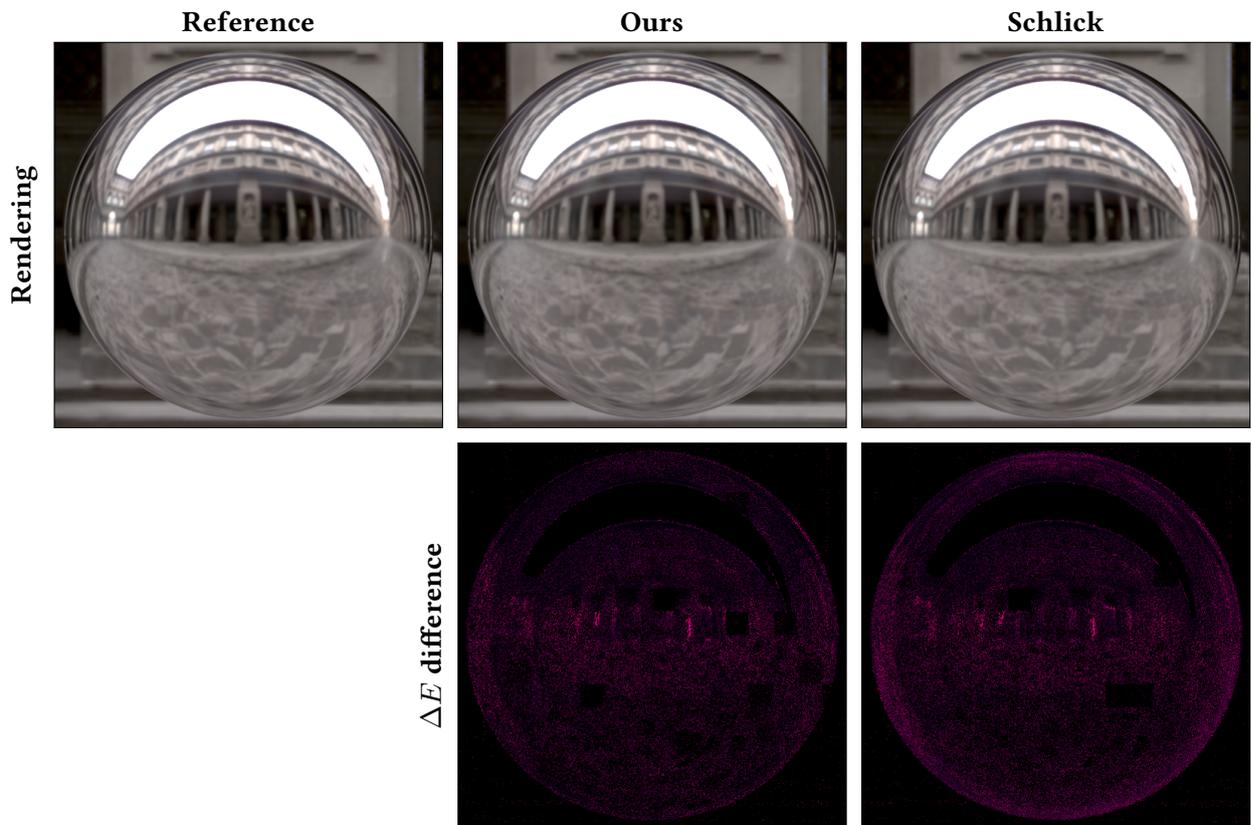
Graph

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Renderings

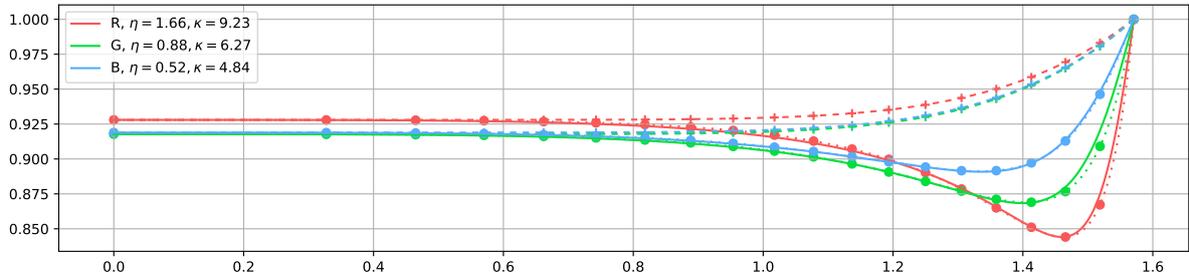
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AI

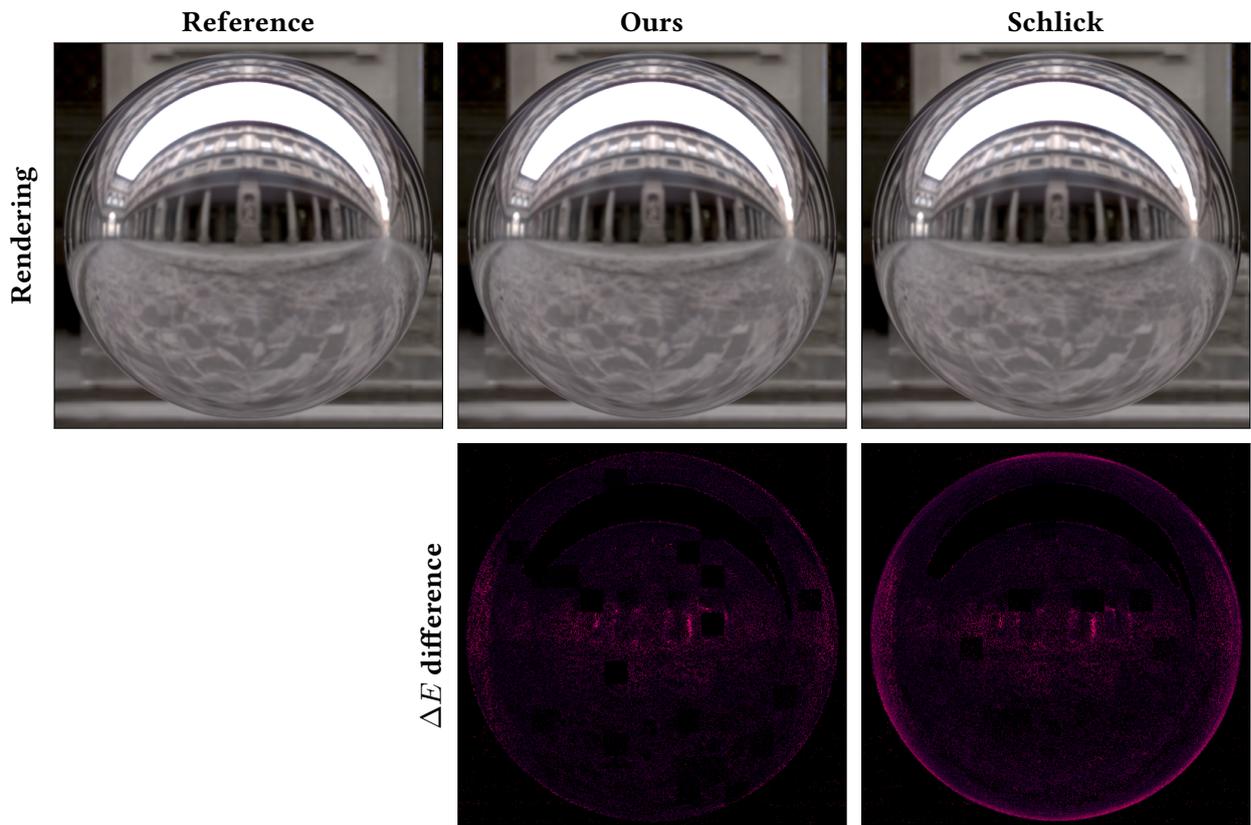
Graph

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Renderings

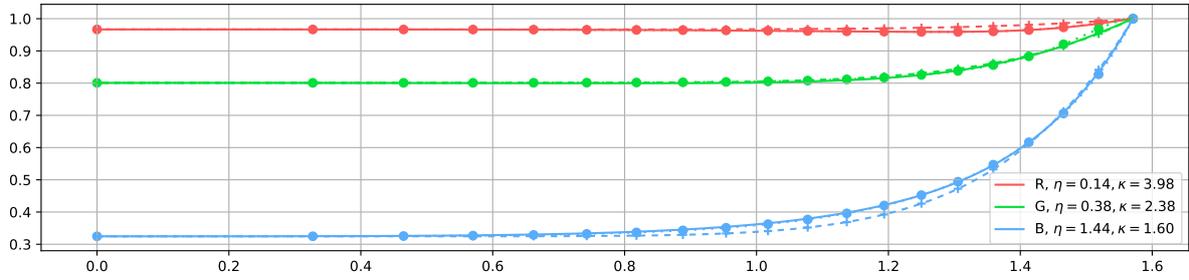
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Au

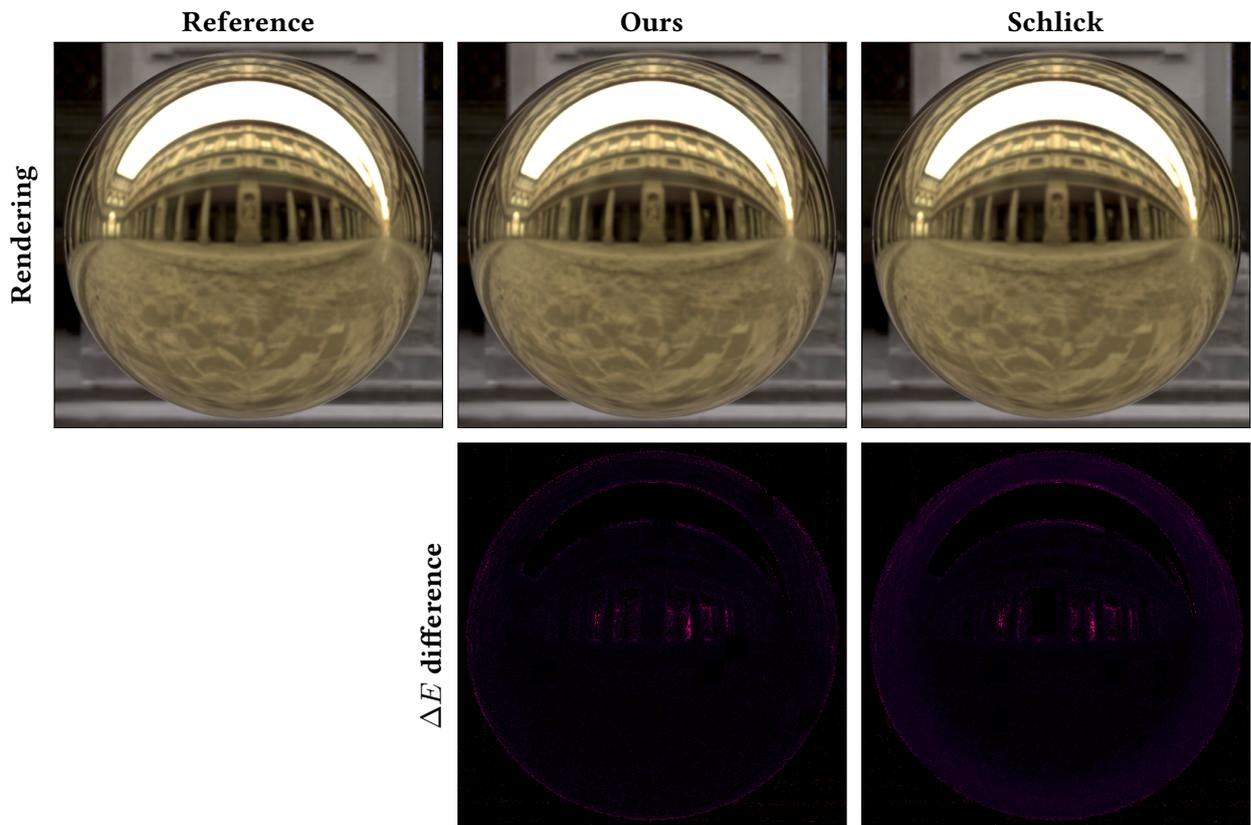
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Renderings

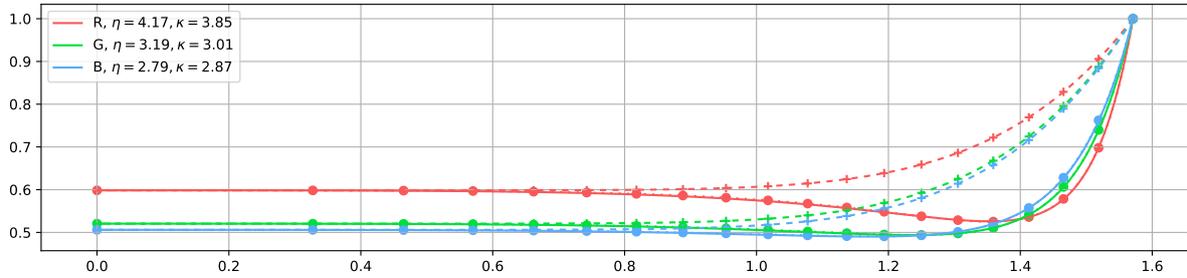
Those renderings were done in Mitsuba using the Uffizi environment and compare the reference Fresnel (left) our fitted decomposition (middle) and Schlick's Fresnel (right).



Be

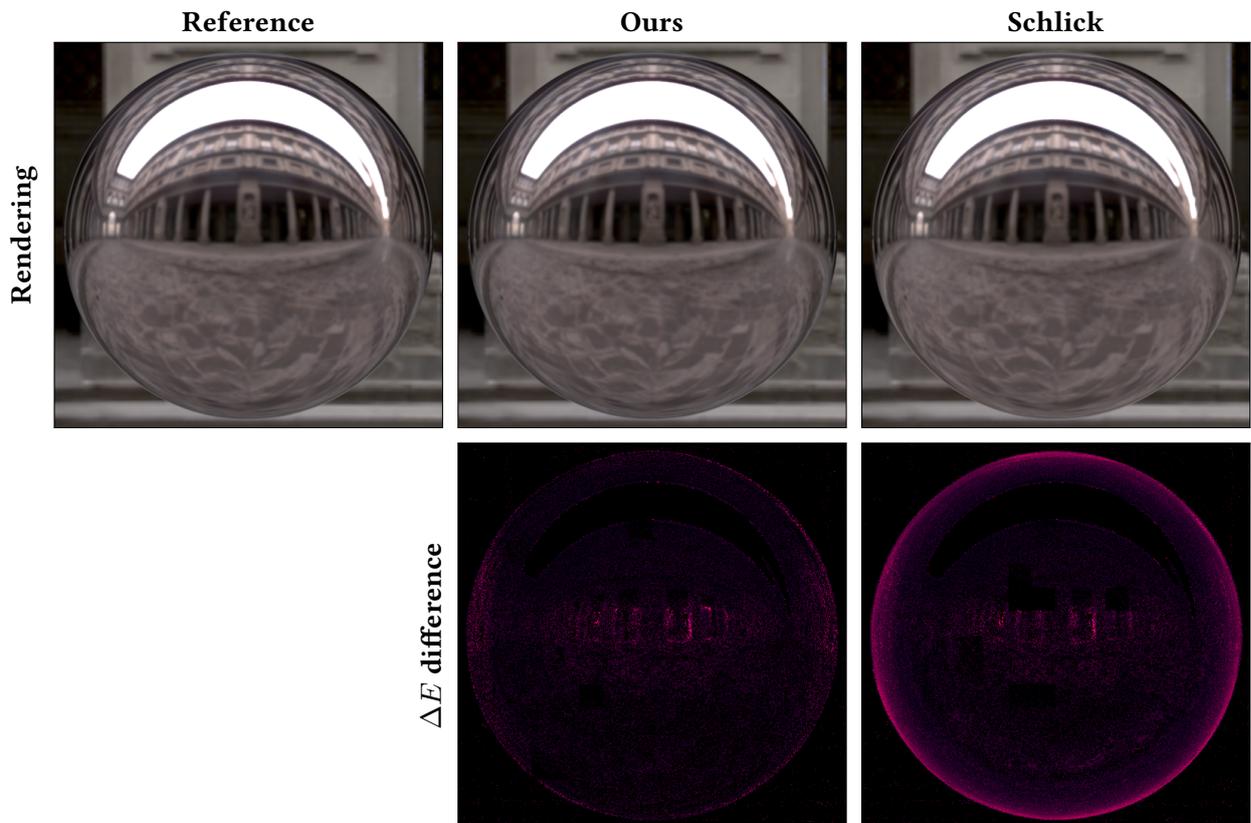
Graph

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Renderings

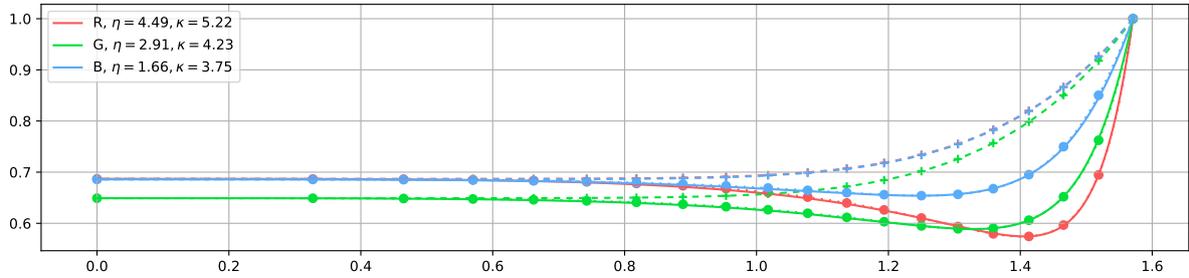
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Cr

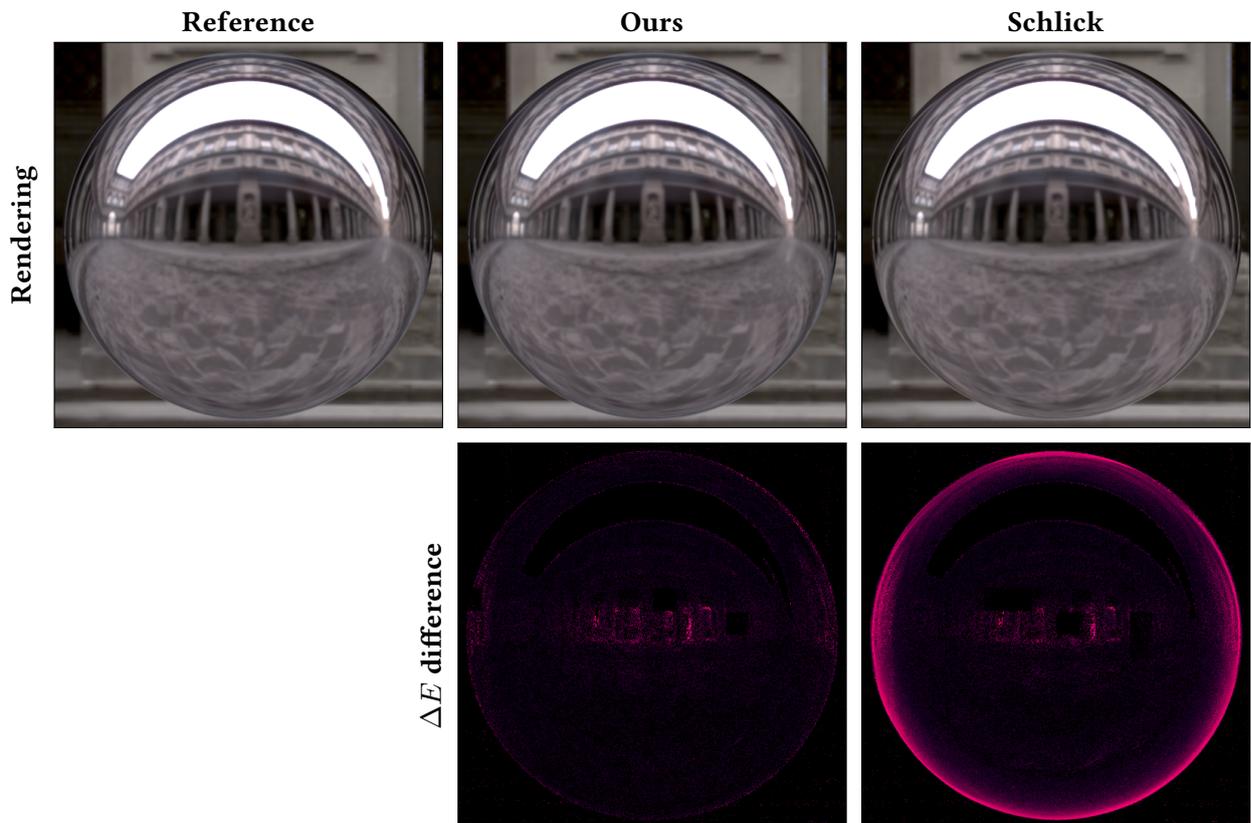
Graph

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Renderings

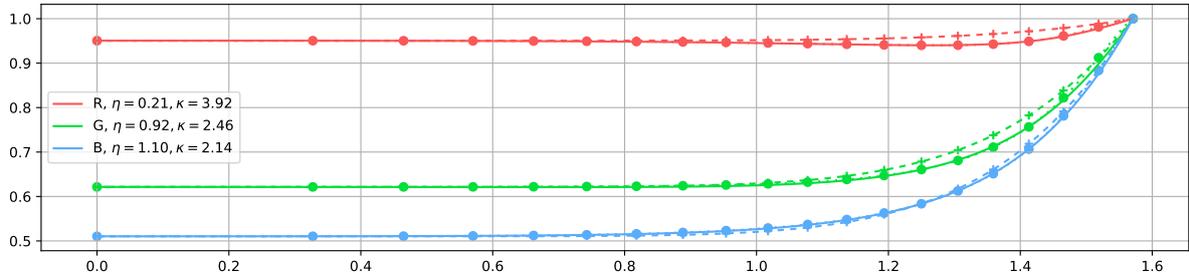
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Cu

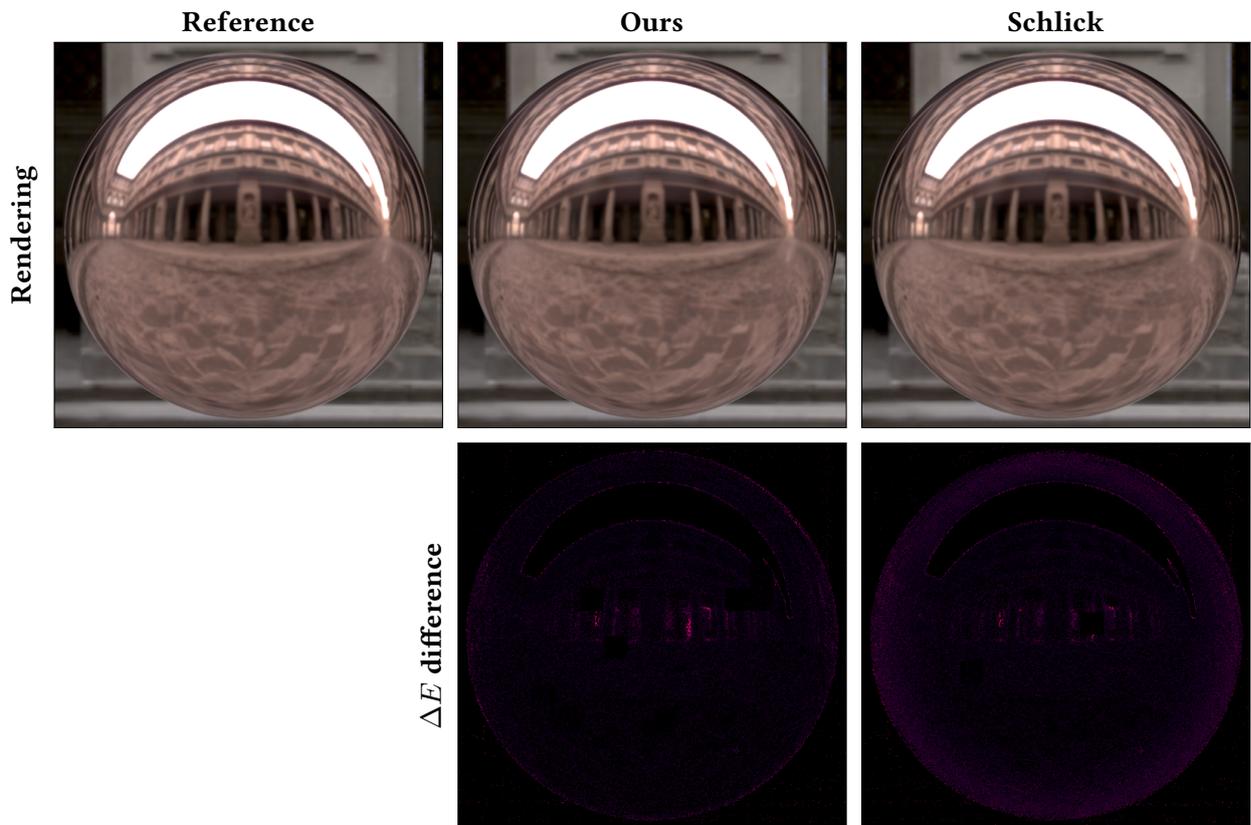
Graph

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Renderings

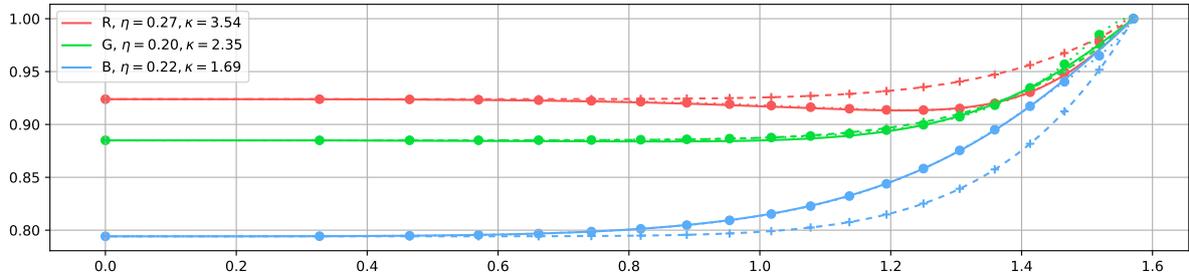
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Li

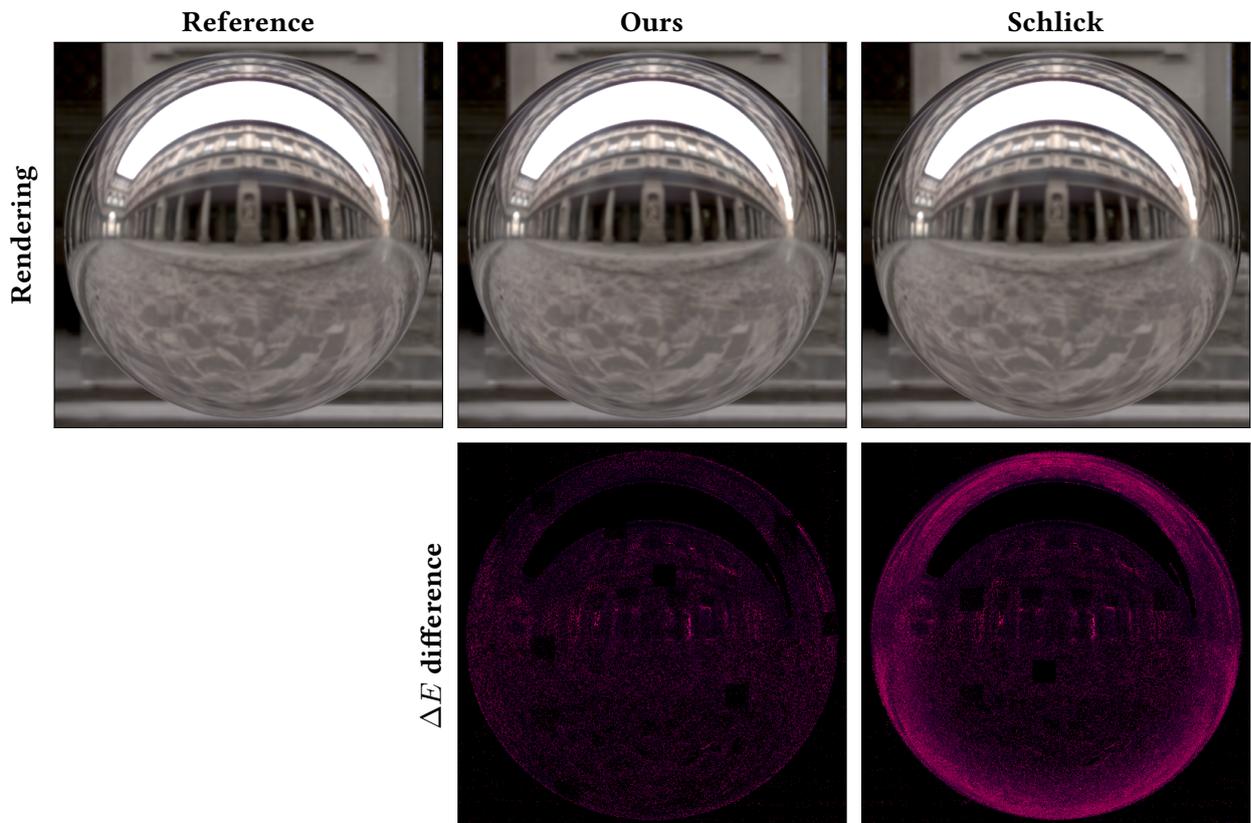
Graph

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Renderings

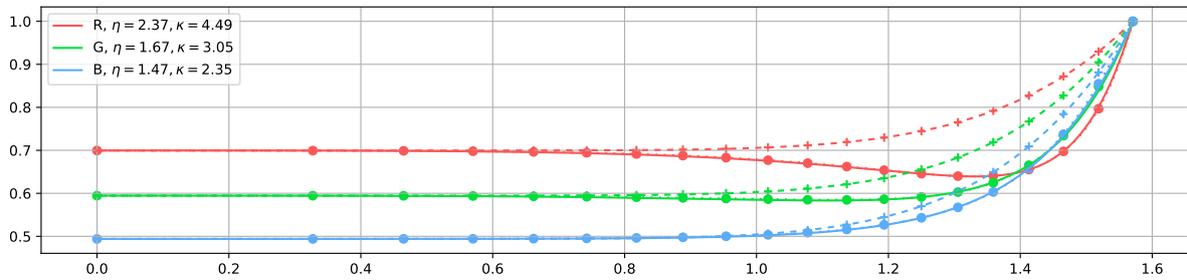
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Ni_palik

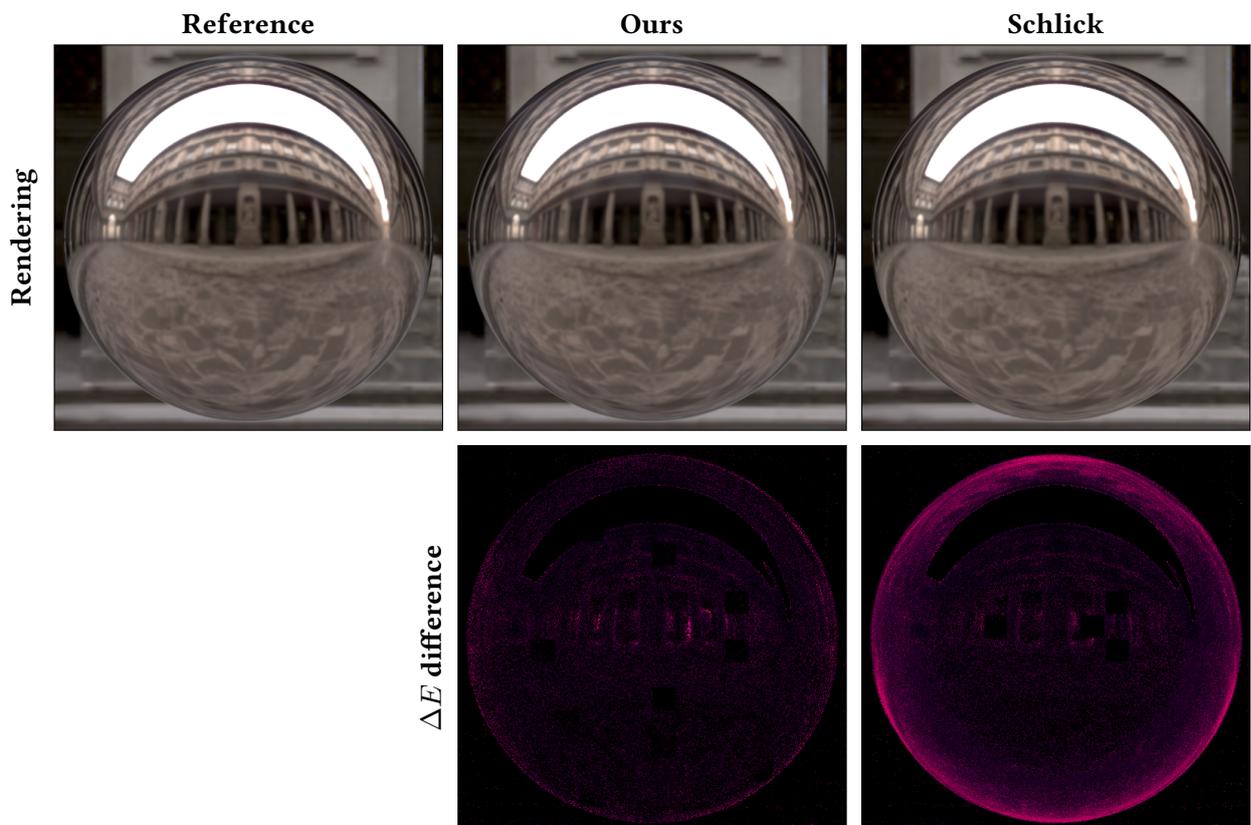
Graph

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Renderings

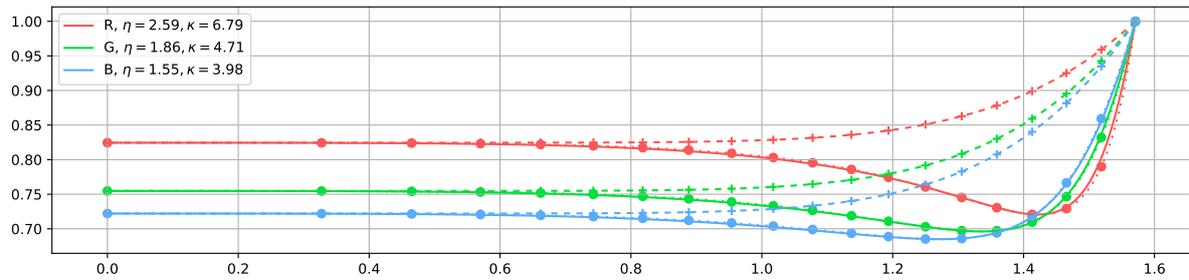
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Rh

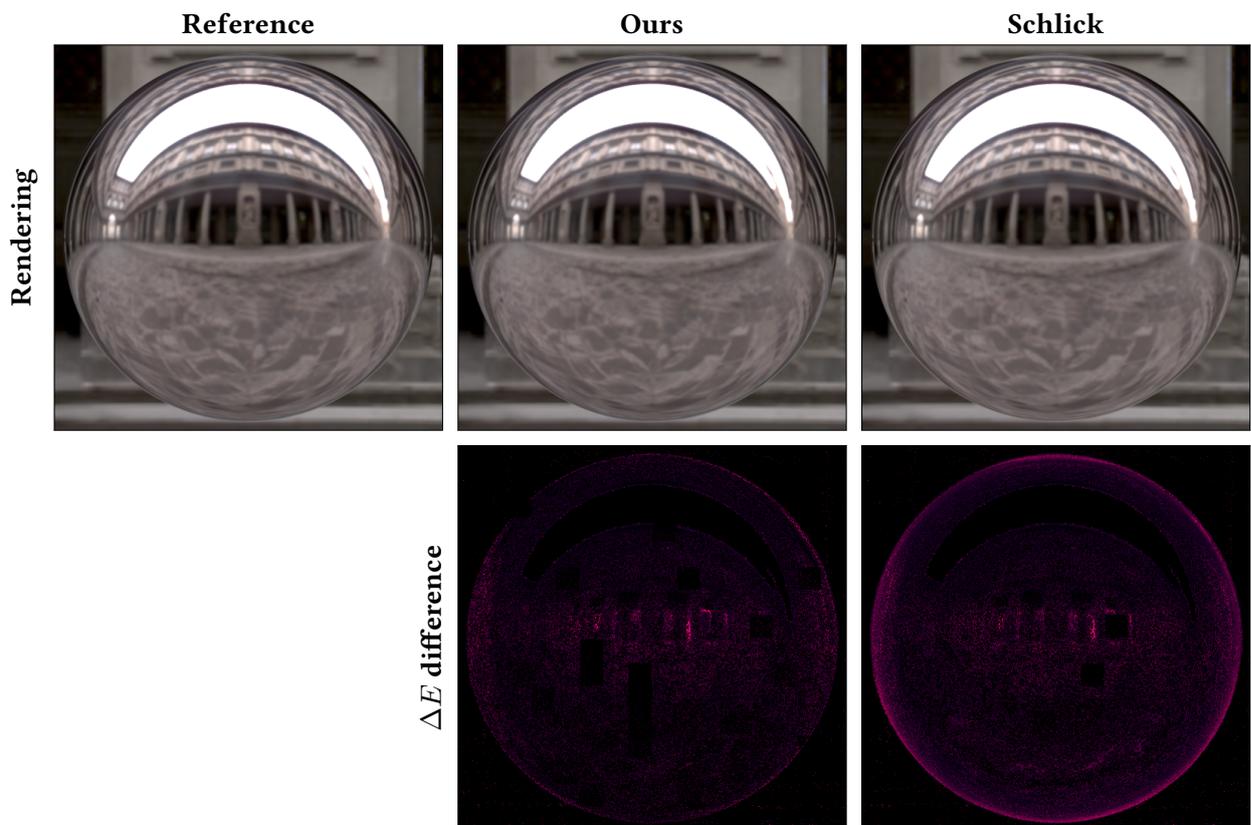
Graph

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Renderings

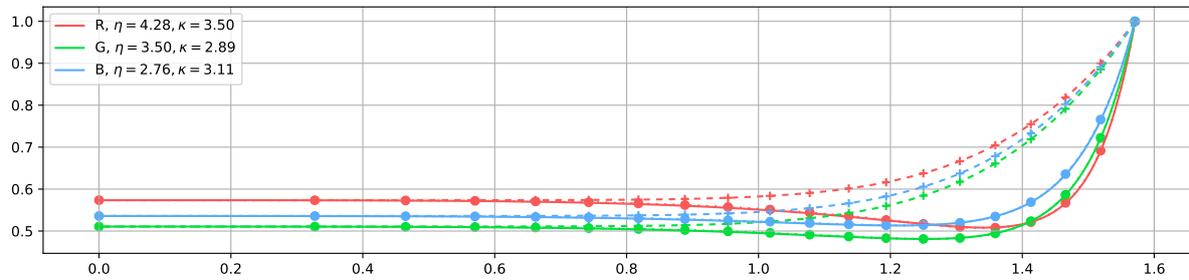
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V_palik

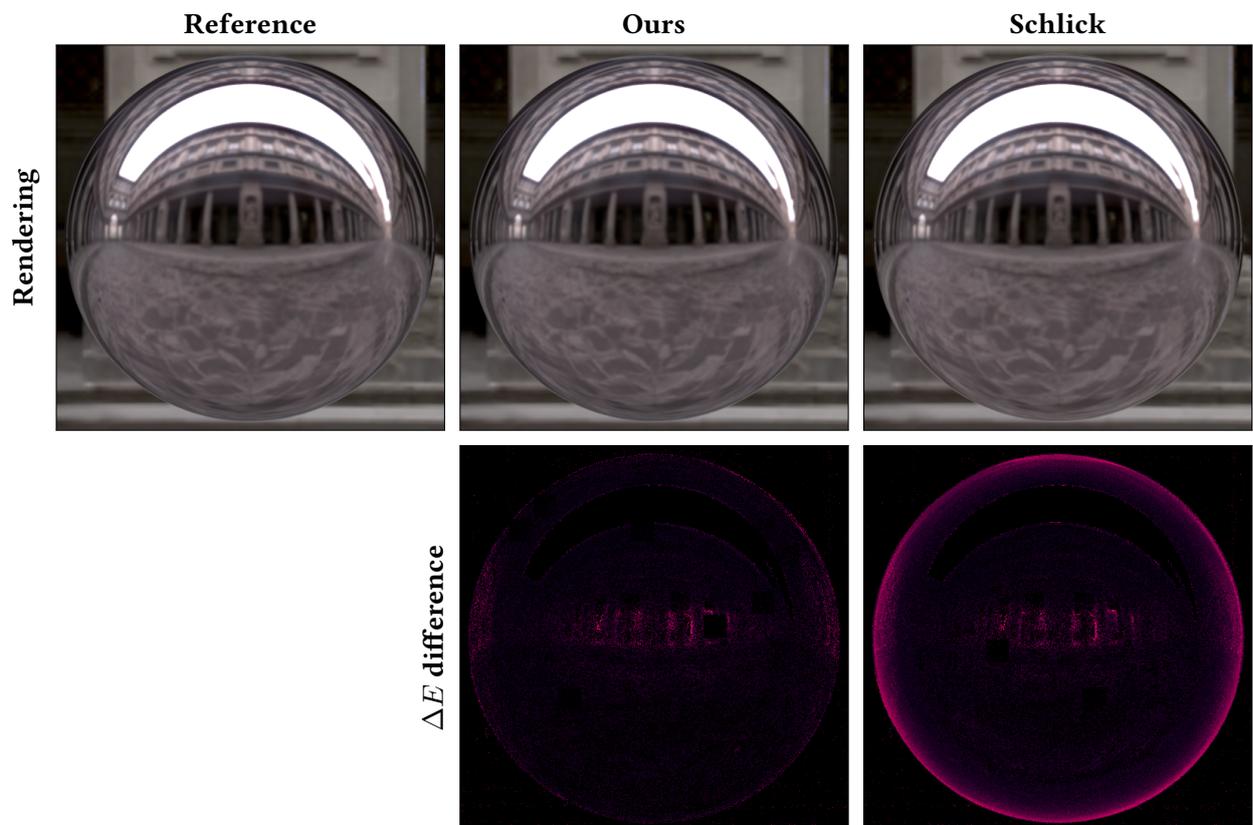
Graph

We display the analytical Fresnel curve in plain for the diffent η , κ per color channel (R, G, B) along our fitted decomposition (in dashed with dots) and compared to Schlick's Fresnel (in dashed with crosses).



Renderings

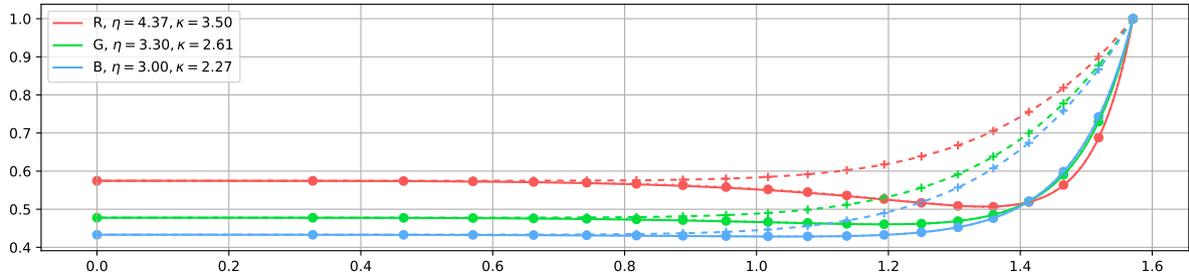
Those rendering were done in Mitsuba using the Uffizi environment and compare the reference Fresnel (left) our fitted decomposition (middle) and Schlick's Fresnel (right).



W

Graph

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Renderings

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