

Abstract Submitted
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Vampire Selfie: A Curious Case of an Apparently Absent Reflection JOSHUA GROSSMAN, CHARLES ADLER, Department of Physics, St. Mary's College of Maryland — When an object is placed between a brushed metal plane and a parallel plane that is marked with lines perpendicular to the metals brushing, an interesting optical phenomenon occurs. A fairly clear reflection of the patterned plane is visible in the brushed metal, but the reflection of the object in between seems largely absent – extremely spread out and diffuse. This 'Vampire Selfie' phenomenon is due to reflections from brushed steel surfaces such as elevator doors and bathroom stalls. Because of the irregular, predominantly vertical brushing, incoming light rays are scattered in the horizontal plane. This leads to reflections being spread horizontally. Any reflections with vertical features, such as faces, are blurred out, but if the background is featureless or has strong horizontal structure, it will seem unchanged. We will discuss the theory of the Vampire Selfie, examine other places where it can be seen, and develop a mathematical model for the point spread function of reflected rays in both the horizontal and vertical directions. We will also show results of experiments examining reflections from surfaces with different brushing finishes and compare them to theory.

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