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Imagine a ruler of length L (when at rest) moving at speed v with respect to our laboratory frame, where the direction of v is along the length of the ruler. There is also a light source set up such that it emits a flash of light (collimated perpendicular to the ruler) that reaches both ends of the ruler simultaneously in the laboratory frame; as a result of this light flash, there will be a shadow of the ruler on the wall. Find what the length of the shadow will be in both the laboratory's and the ruler's reference frame. Neglect the effects of diffraction around the edges of the ruler.

