

CS 667 Problem 3.

Suppose we take two pictures of the same scene, from two camera positions A and B. (I'm thinking of two cameras that are near one another and facing about the same direction, as used for stereo in computer vision.) Suppose we take a picture from camera position A with a point light source at position B, and then vice versa (a view from B with lighting from A). There is no other illumination.

Consider a bit of surface seen from both cameras. Does the principle of reciprocity ensure that the observed radiance will be the same? If so, prove your answer; if not, explain why not and give an example of a similar setup that would.