



MAY 7, 2020

## REALISTIC IMAGE SYNTHESIS (SS 2020) ASSIGNMENT 1

Submission deadline for the exercises: May 14, 2020

### 1.1 Radiometric Quantities: Power (25 points)

You are given a sphere with radius  $R$  and an infinite plane, offset by  $D > R$  units from the center of the sphere. Assume that the surface of the sphere is a diffuse emitter with radiosity  $B$ . Calculate the total power incident on the plane. Give a reason for your answer.

### 1.2 Radiosity: Differential Form Factors on a Cube (25 points)

In this exercise we look at the computation of form factors between two differential areas (i.e. points)  $\delta A_1$  and  $\delta A_2$ .

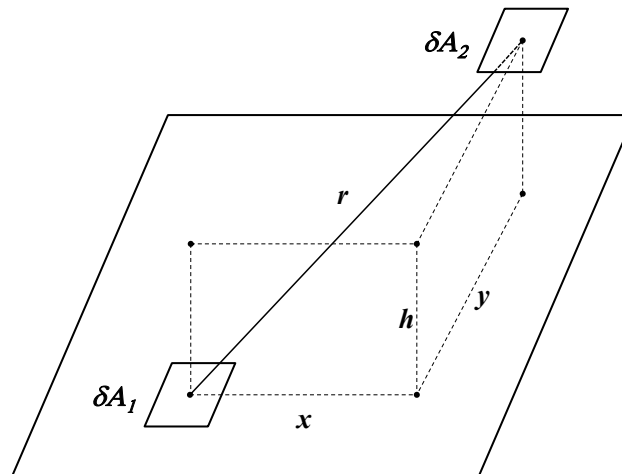


Figure 1: Two differential areas  $\delta A_1$  and  $\delta A_2$ .

Given  $h$ ,  $x$  and  $y$ , compute  $F_{\delta A_1, \delta A_2}$  for the points  $\delta A_1$  and  $\delta A_2$  in Figure 1, assuming that the points belong to patches that lie in parallel planes.

## Procedure of Submitting

Please submit your solutions in .pdf format via email to the tutor: s8dudavi@stud.uni-saarland.de  
The submission deadline is midnight, i.e., May 14, 2020, 23:59. Late submissions within 24 hours will receive at most 75% of the points. Late submissions after more than 24 hours will not be accepted.