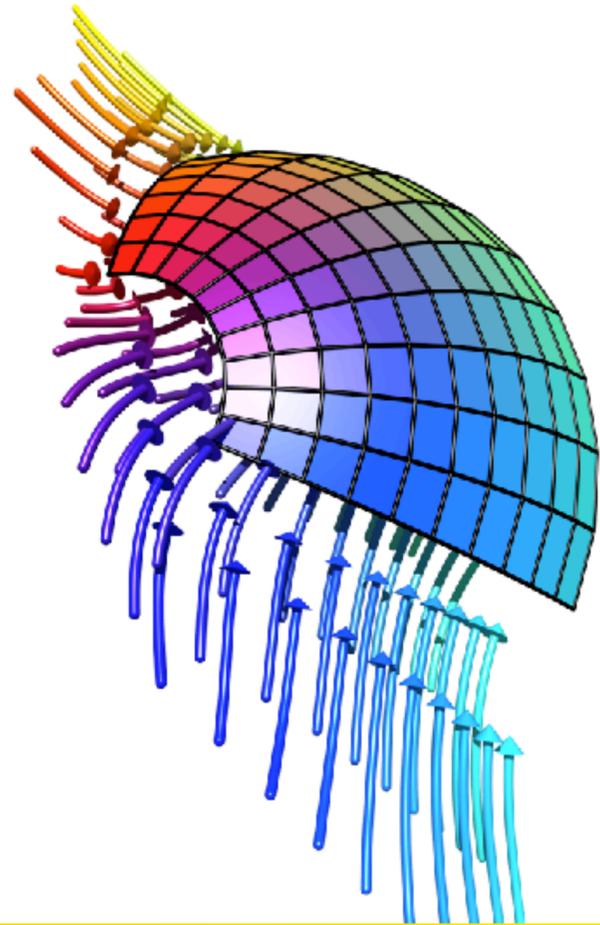


Lecture 27



Flux integrals II

Reminders

2. Midterm 11/10/2022: 5:30-7:30

Focus on 15-25 Psets. So, today's lecture is the last topic. So, CURVES, SURFACES, Line and surface INTEGRALS, Linear and Quadratic APPROXIMATION, GREEN and FTOLI are the main topics.

Table of Contents

1) Flux integral review

2) Walking in the rain

3) Moon Base

4) More typical examples

5) Worksheets

The flux Review

General

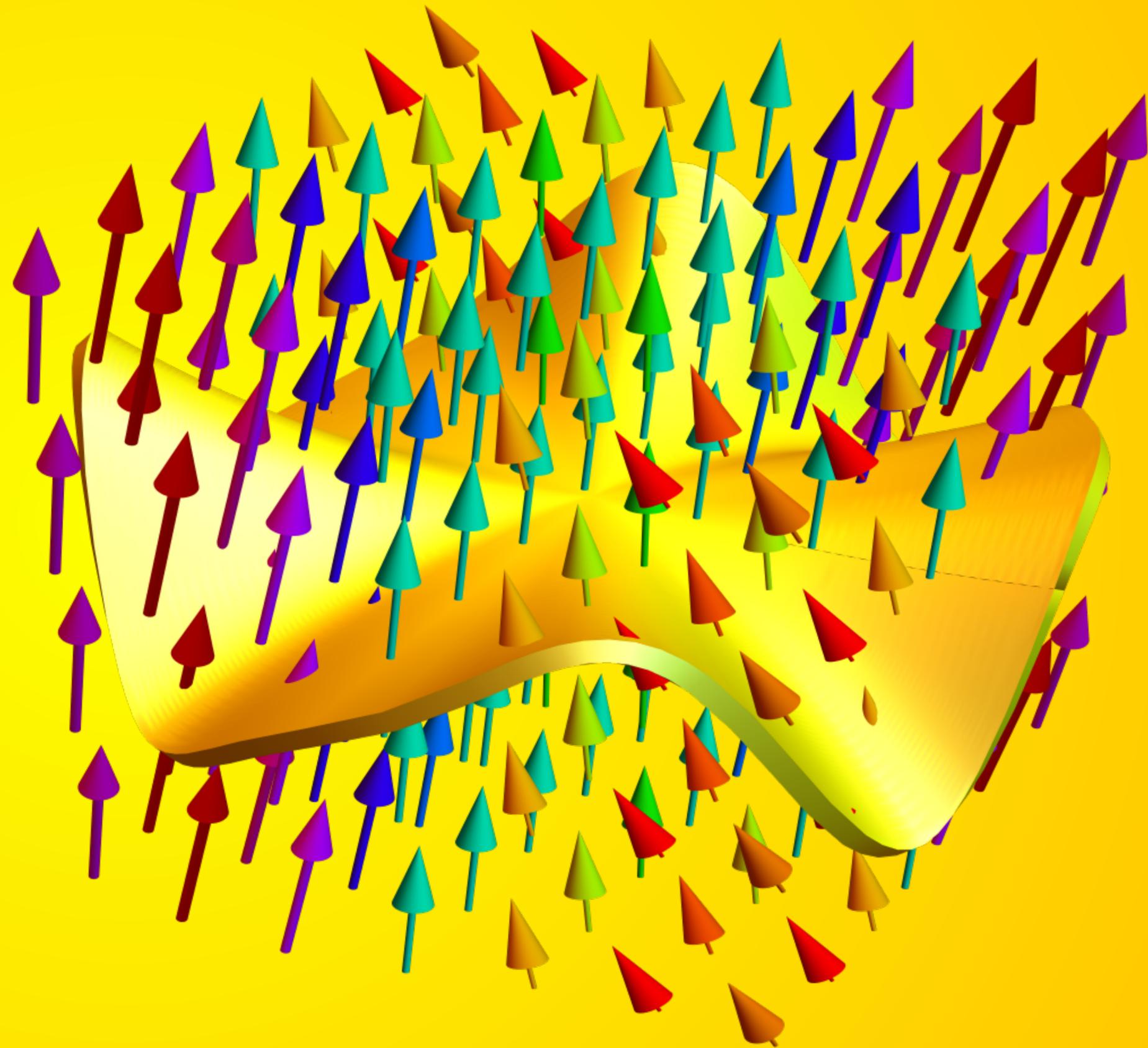
$$\iint_R \vec{F}(\vec{r}(u, v)) \cdot \vec{r}_u \times \vec{r}_v \, dudv$$

Special case

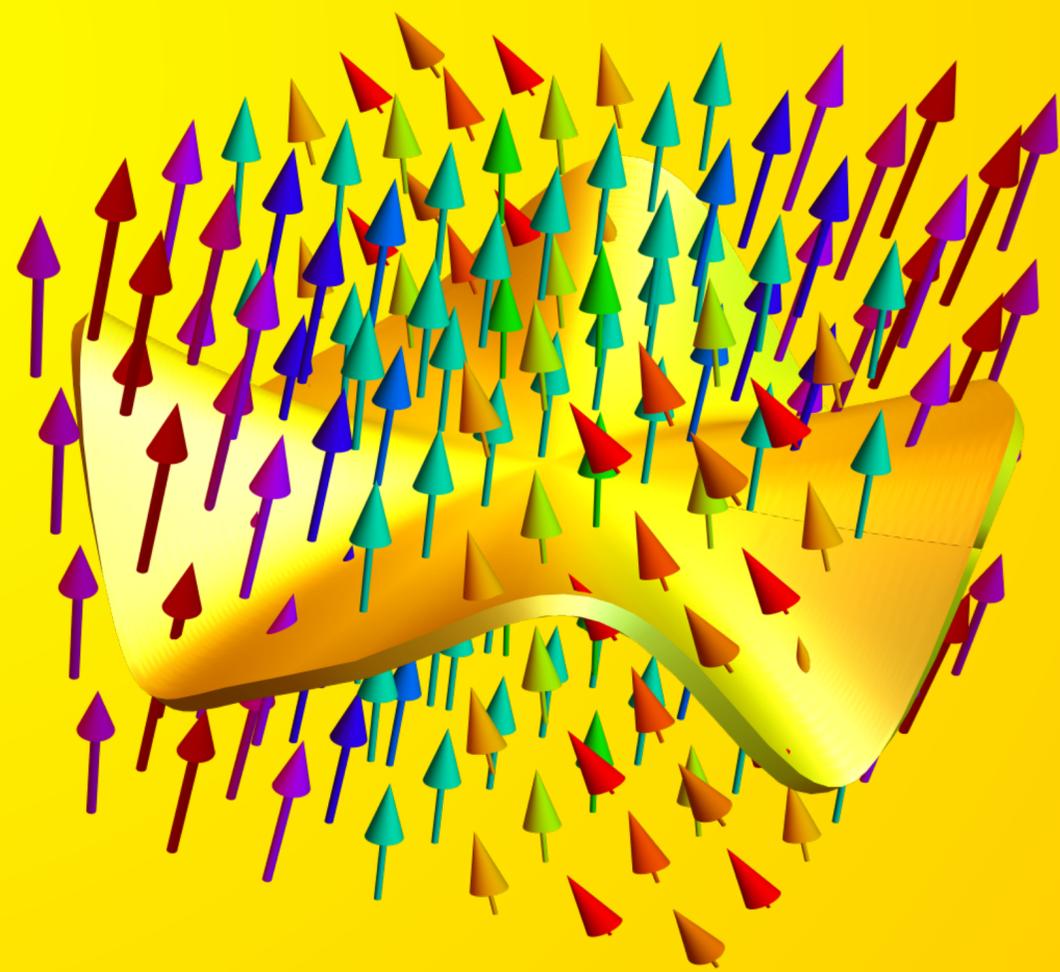
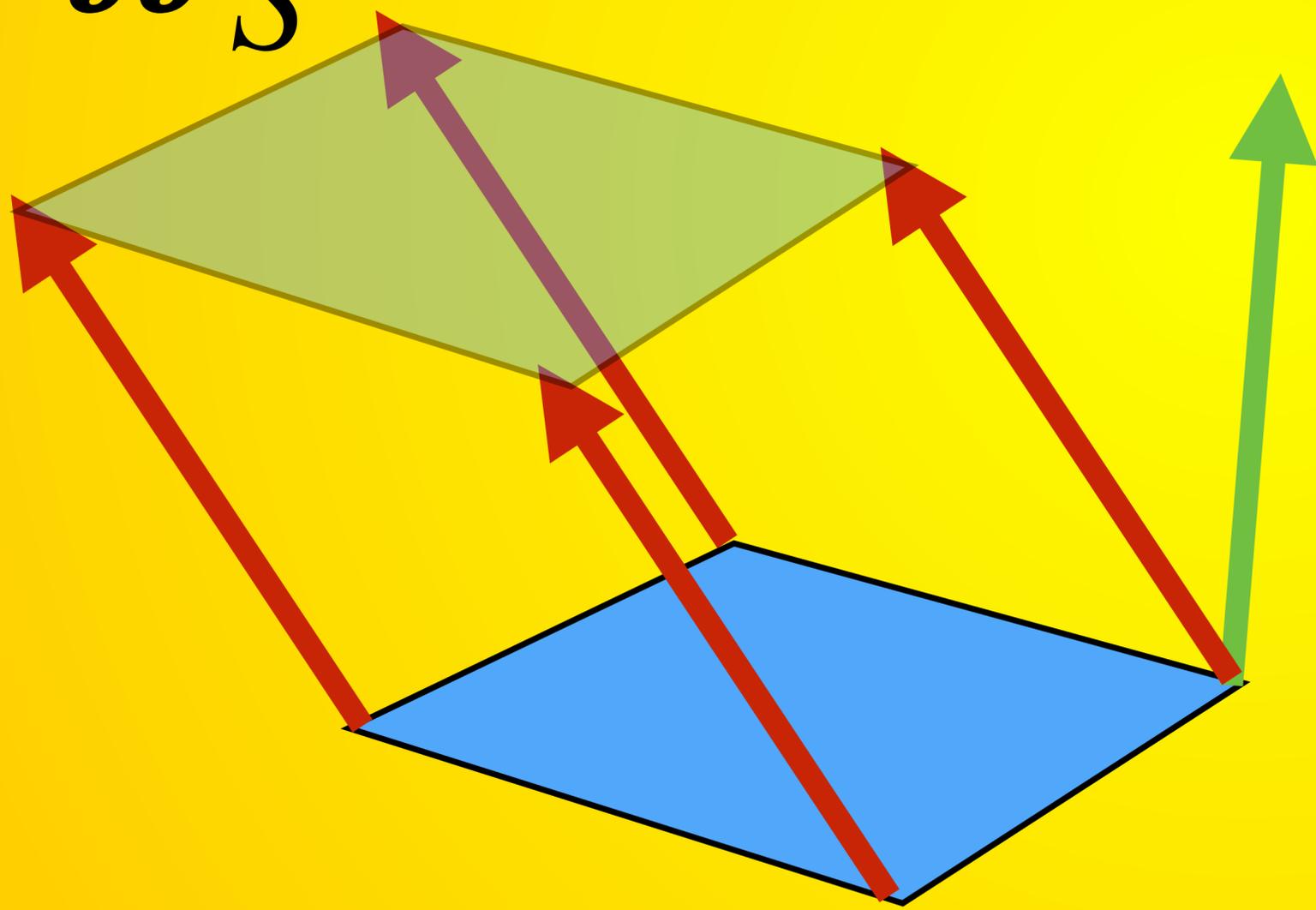
$$\vec{F} \cdot \vec{n} = C$$

$$\iint_S \vec{F} \cdot d\vec{S} = C \cdot \text{Area}(S)$$

$$\iint_S \vec{F} \cdot d\vec{S}$$



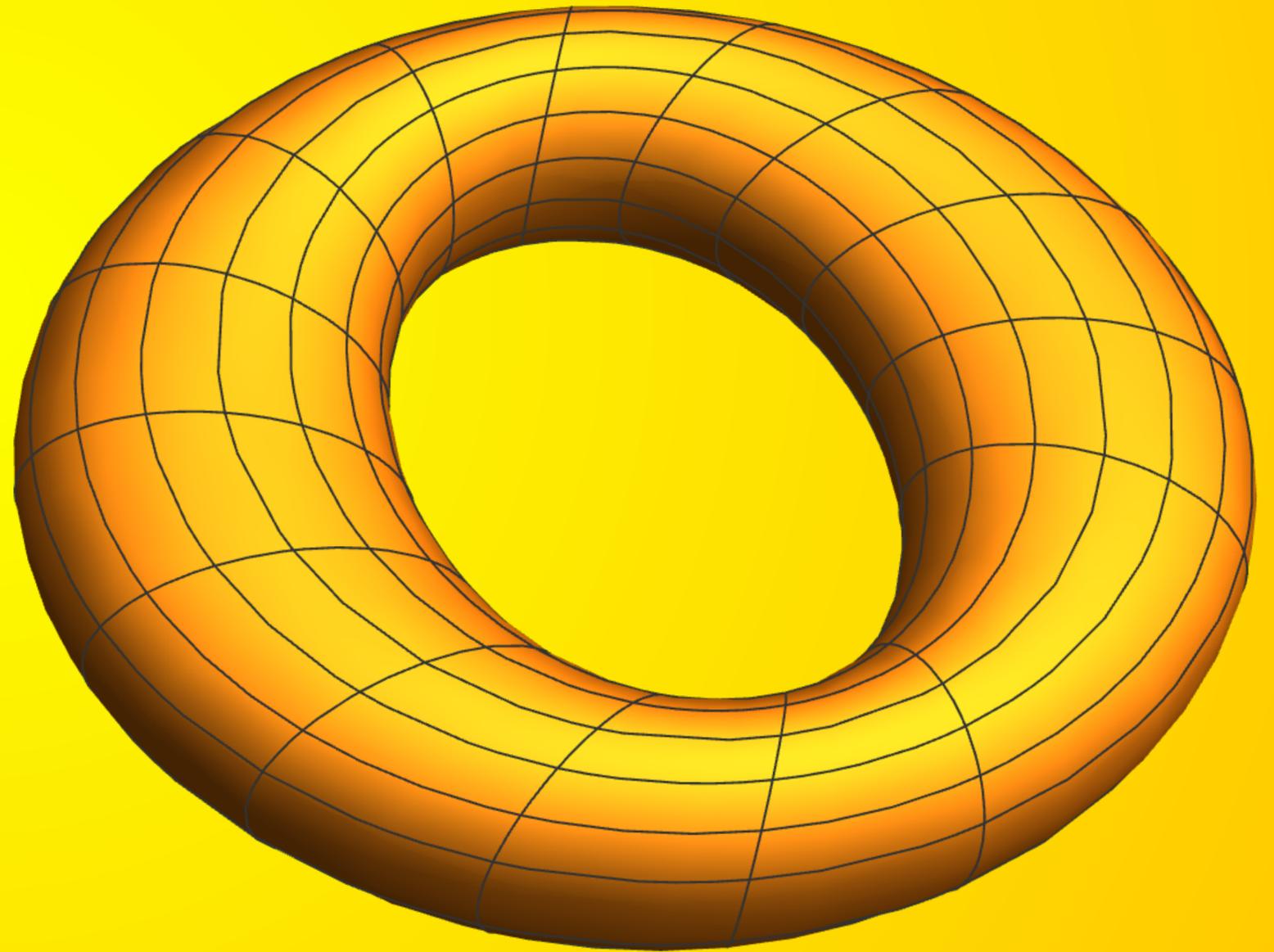
$$\iint_S \vec{F}(\vec{r}(u, v)) \cdot \vec{r}_u \times \vec{r}_v \, du dv$$



Question

$$\iint_S \langle 3, 4, 5 \rangle \cdot \overrightarrow{dS}$$

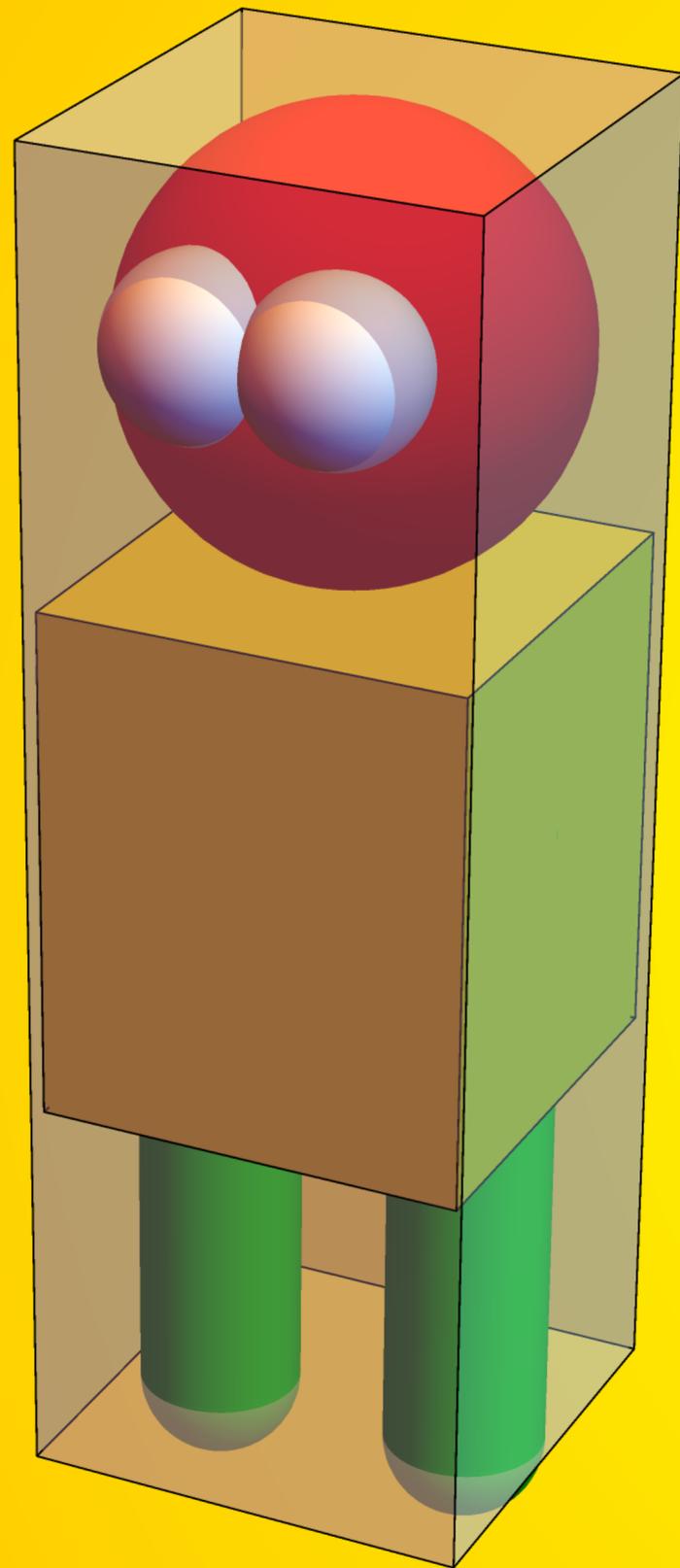
Can you intuitively
see why this is zero?



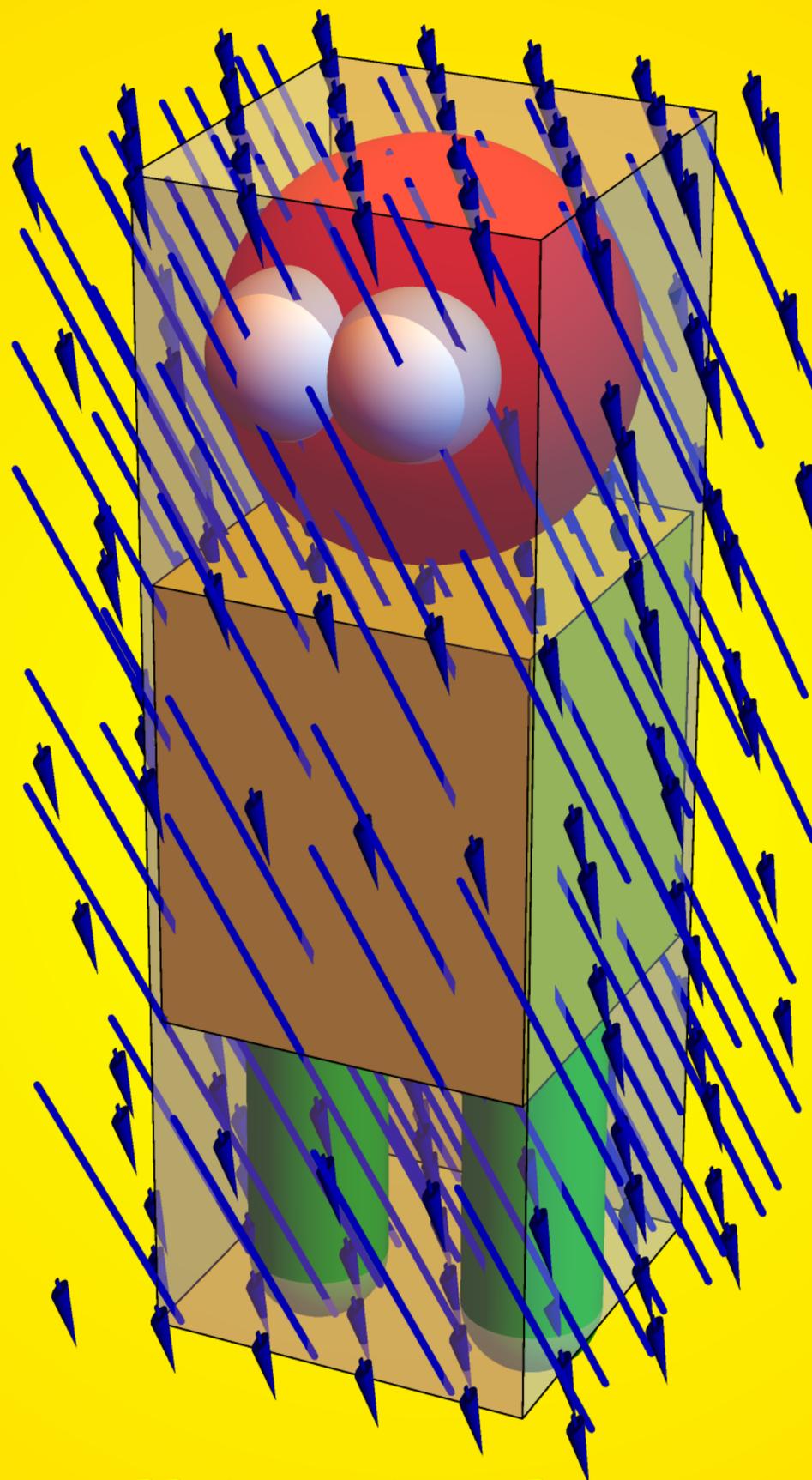
Who wants to get wet?



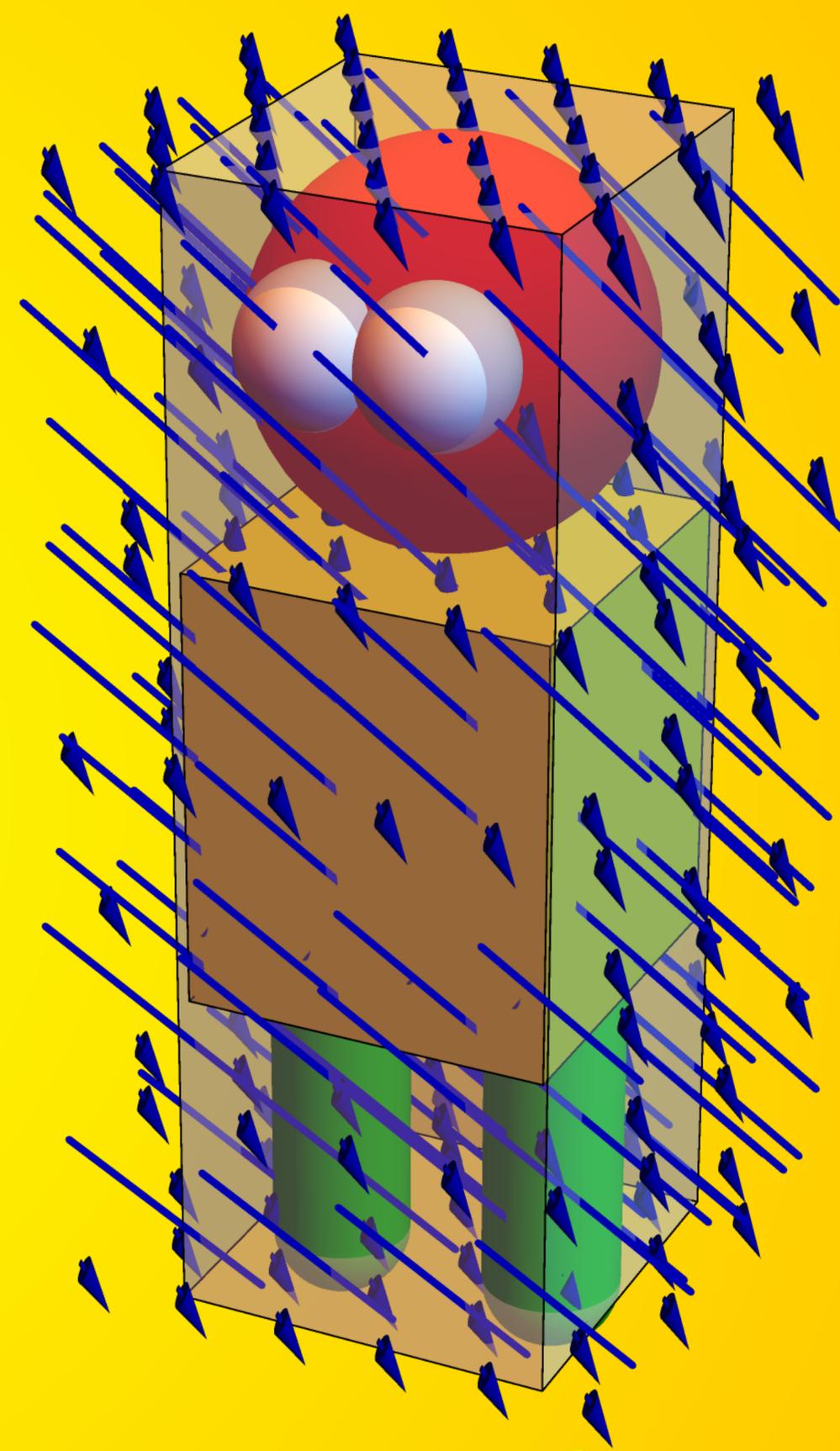
Walking in the rain



You



walking in the rain



running in the rain

S1 = Graphics3D[Opacity[0.42], Cuboid[0, 0, 0, 1, 1, 2]]

Moon Problem

Lunar Deed

From the recognized authority of the Lighted Lunar Surface, this document represents the issuing of 10 (ten) sercas on the Lighted Lunar Surface.

This deed is for the Lunar Property listed below:

Lunar Description:

Area E-10, Quadrant Echo, Lot Number 446
This property is located 021 squares south and 006 squares east of the extreme northwest corner of the recognized Lunar chart.

(Ten sercas equals approximately 1,777.58 acres)

This deed is recorded in the Lunar Embassy located currently in Rio Vista, California, United States of America, and in the name of Ruth and Claver Knill from hereinafter known as owner of the above described property.

This deed is transferable or tradeable or assignable upon the decision of the owner at his/her discretion.

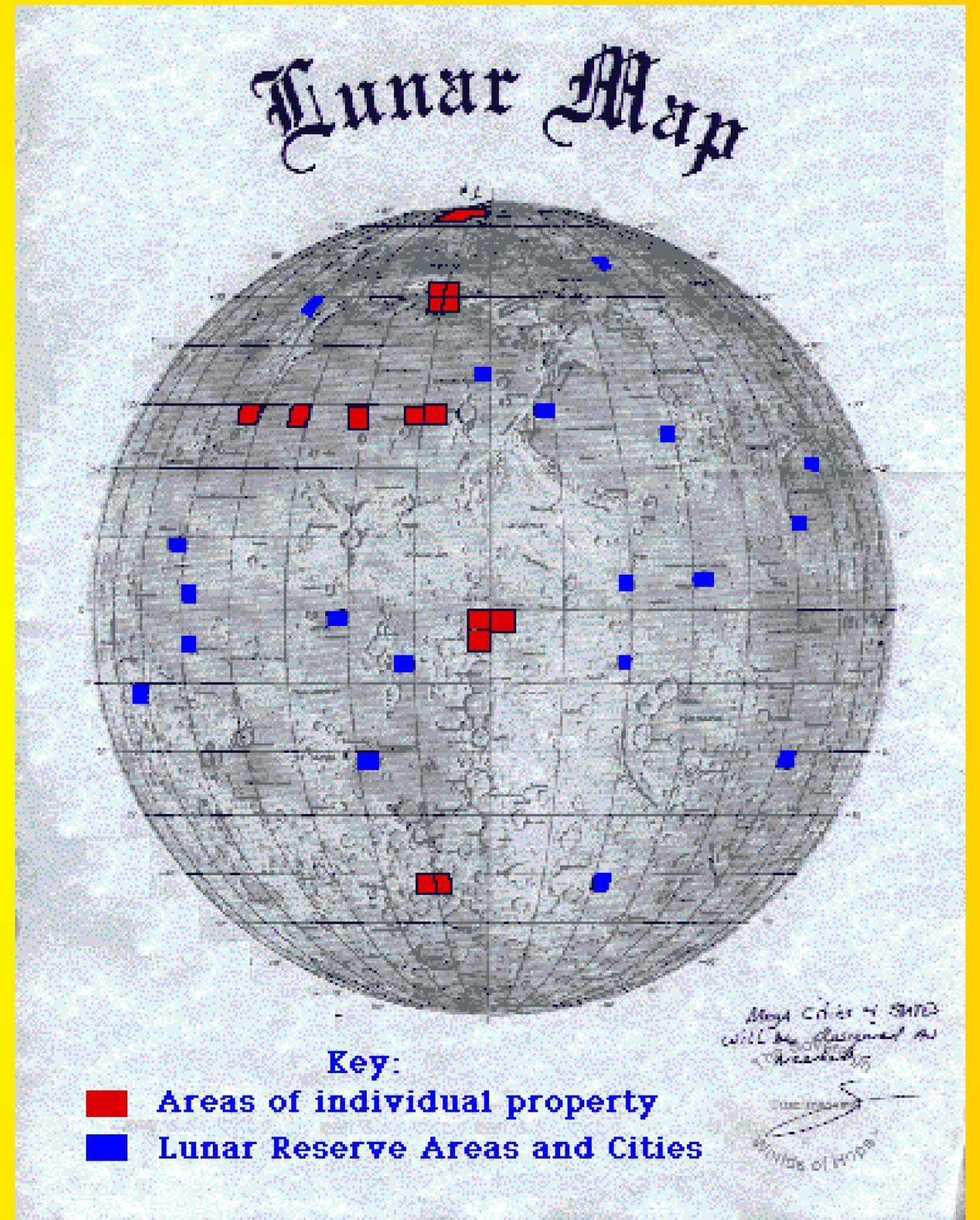
This document conforms to all of the Lunar Real Estate Regulations set forth by the Head Cheese, (Dennis M. Hope) and shall be considered in proper order when his signature and seal are affixed to this document.

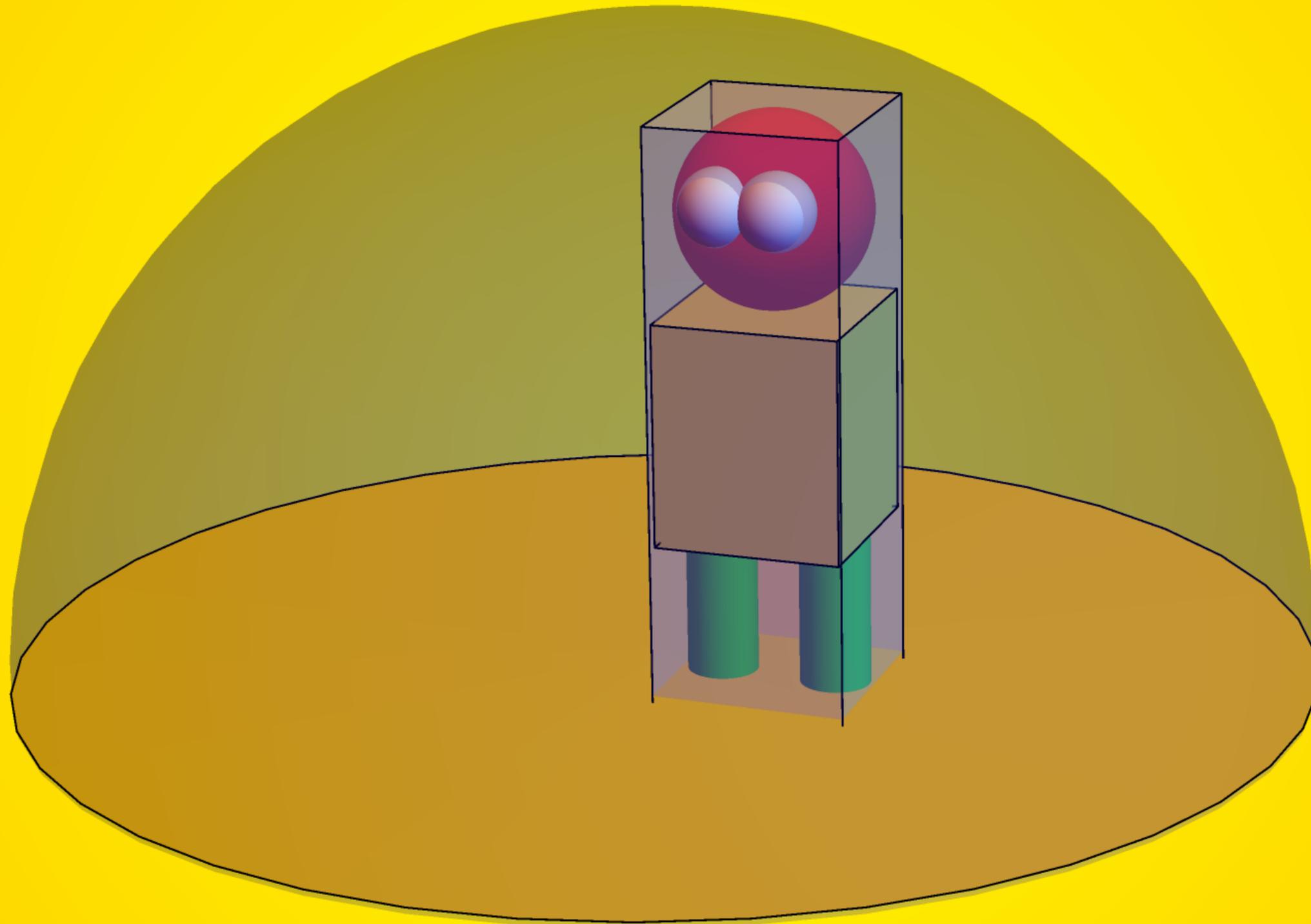
This sale approved by the Board of Realtor,
The Omnipotent Ruler of the Lighted Lunar Surface.


The Head Cheese

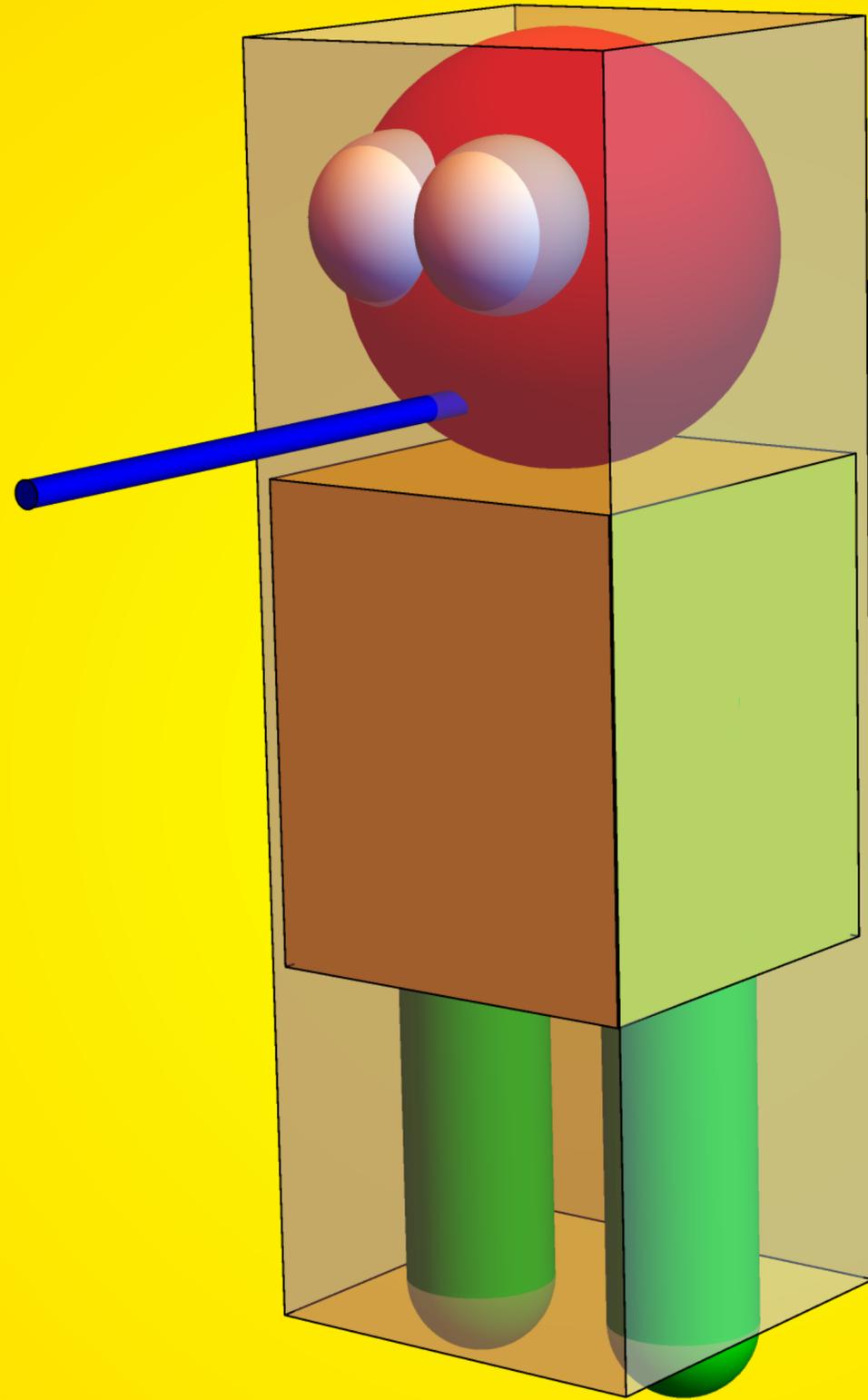
12-18-2000
Dated







Oliver in his moon base



Defense with Blow gun!

THE END