

## Project 2

The second project is writing a Matlab function `flux.m` which works as follows.

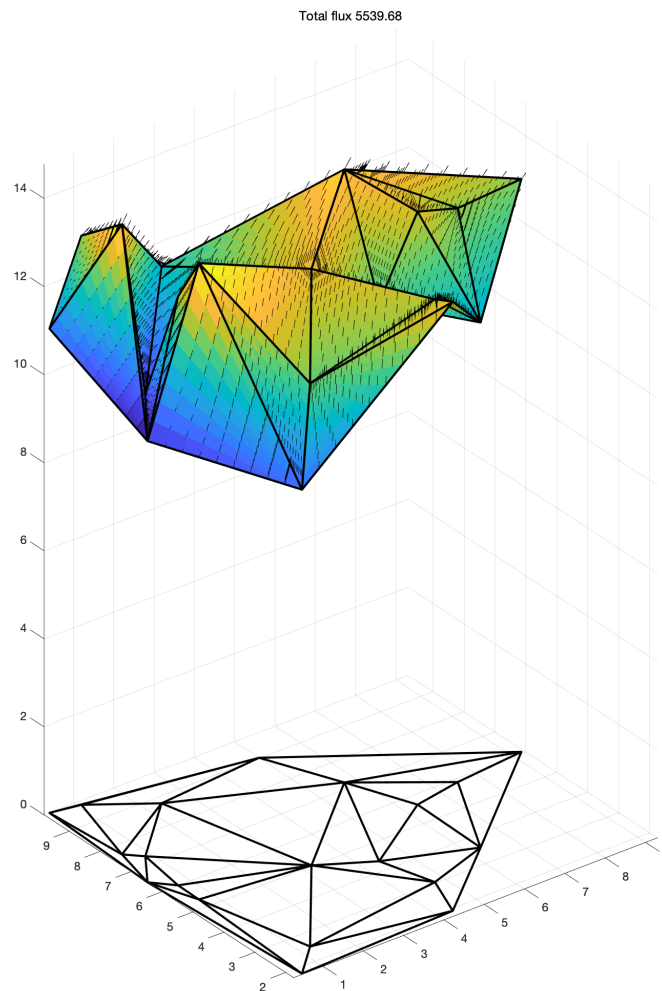
- As an input, `flux.m` takes
  1. a 3-dimensional vector field, and
  2. a set of  $x, y, z$ -coordinates of  $n$  points in  $\mathbf{R}^3$  as a  $n \times 3$  matrix.
- As an output, `flux.m`
  1. draws a ploygonal surface of triangles with vertices from  $n$  points, and
  2. computes the total flux of the vector field over the surface.
- Each project group must submit
  1. an **m-file** `flux.m` (10 points), and
  2. a **1-page report** (10 points).
- Important issues:
  1. The file `flux.m` must be an executable *matlab function file*.
  2. The report should explain how the algorithm of the function `flux` works.
  3. See the next page for the example code.
- Due date is **Dec. 7th, 11:59pm**.

- A example script for running flux.m:

```
pt_xy = rand(20, 2)*10 ;  
pt_z = rand(20, 1)*5 + 10;  
pts = [pt_xy, pt_z]; % Preparing random n points  
vf = @(x, y, z) [sin(x)+y.^2, -y.^2, -x.^2+z.^2]; % An example vector  
field  
flux(pts, vf) % Running function file
```

- Results:

```
Ans =  
    5539.68
```



(The polygonal surface is required only. The figure above shows extra information.)