Problem Surface cap$_6^4$930: Geometric Modeling

November 17, 2019

Problem space curve

(Individual work)

- (3 points) Add a Frénet frame to the earlier space curve assignment at the smooth meeting point of the two curve segments. Use red for the tangent, green for the main normal and blue for the bi-normal.

- (2 points) bonus points: animate the motion of the Frénet frame along the whole curve.

Surface problem

(Team of two or individual work; if team add comment: other team member)
From the paper "Platonic Speroids"

- if undergrad only: do the work below for the hexoid (points for the hexoid count double); bonus: octoid.

- if grad: do the work below for the hexoid and the octoid; bonus: icosoid

Bonus points count 1/2 the regular points offered below, i.e. up to 9 points.
For each surface

- (6 points) render the control net

- (4+2 points) render the surface (with +2 for nice lighting)

- (4 points) show the normal at every vertex and every patch center (u=v=0.5).

- (2 points) display the Gauss curvature at every vertex and every patch center (u=v=0.5).