```
% Input data: alpha and beta in degrees
alpha_deg = [ 106.4, -159.3, 36.8, 108.8 ];
beta_deg = [ 67.1, 34.3, 41.2, 126.3];

% Convert degrees to radians
alpha = deg2rad(alpha_deg);
beta = deg2rad(beta_deg);,

% Calculate Cartesian components
x = cos(alpha) .* sin(beta);
y = sin(alpha) .* sin(beta);
z = cos(beta);

% Axially opposite vectors
x_opposite = -x;
y_opposite = -y;
z_opposite = -z;

% Create a unit sphere for reference
[theta_sphere, phi_sphere] = meshgrid(linspace(0, 2*pi, 100), linspace(0,
pi, 50));
x_sphere = sin(phi_sphere) .* cos(theta_sphere);
y_sphere = sin(phi_sphere) .* sin(theta_sphere);
z_sphere = cos(phi_sphere);

% Plotting
figure;
hold on;
% Plot the unit sphere
surf(x_sphere, y_sphere, z_sphere, 'FaceAlpha', 0.1, 'EdgeColor', 'none');

% Define unique colors for the vectors
colors = lines(length(alpha_deg)); % Generate a color map

% Plot each vector, its opposite, and labels
for i = 1:length(alpha_deg)
    % Plot the vector
    quiver3(0, 0, 0, x(i), y(i), z(i), 0, 'Color', colors(i, :),
'LineWidth', 2);
    % Plot the opposite vector
    quiver3(0, 0, 0, x_opposite(i), y_opposite(i), z_opposite(i), 0, '--',
'Color', colors(i, :), 'LineWidth', 1.5);
    % Add labels near the tip of each vector
    text(x(i) * 1.1, y(i) * 1.1, z(i) * 1.1, num2str(i), 'Color',
colors(i, :), 'FontSize', 10, 'FontWeight', 'bold');
end

% Enhance plot
xlabel('X');
ylabel('Y');
```

```
zlabel('Z');
title('Unit Sphere with Vectors, Opposites, and Labels');
axis equal;
grid on;
view(3);
legend({'Unit Sphere', 'Vectors'}, 'Location', 'bestoutside');
hold off;
```