"On a problem of A. D. Wallace on topological semigroups."

Let $S$ be the 2-sphere; to give $S$ a structure of a topological semigroup with $SS = S$ but the multiplication is not left or right projection.

Represent the points of $S$ by $z + xe^{i} + ye^{j} = \frac{z}{x + y} = \frac{z}{x + \text{imag}}$

Where $x + y = x + \text{real} + iy = \frac{z}{x + y} = \frac{z}{x + \text{imag}}$

Let $z_{1} = 0$, $z_{2} = 0$

$z_{1} + z_{2} = 0$

Check

Multiply, is associative and commutative.

Scale factor to take point to surface.
\[ a^2 \left( x^2 + 3y^2 \right) + 4y^2 \left( x^2 + 3y^2 \right) = 0 \]

The product is: \[ (x^2 + 3y^2) = 0 \] and \[ 4y^2 = 0 \]