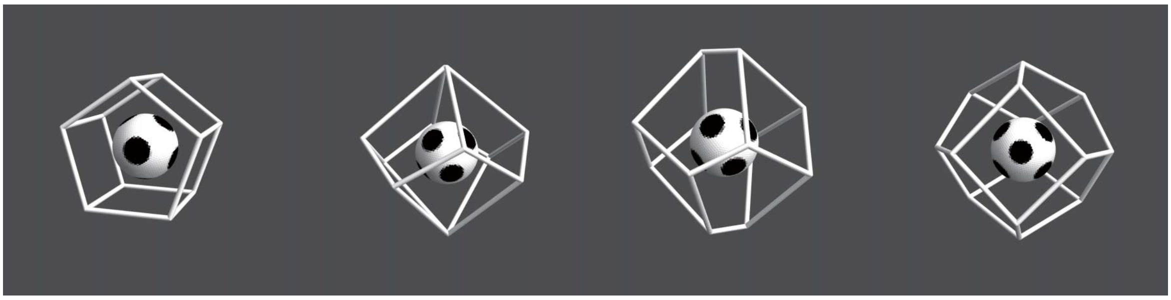

Fig. 3. Approximated polyhedrons for $R = 8.6$ with different initial conditions.

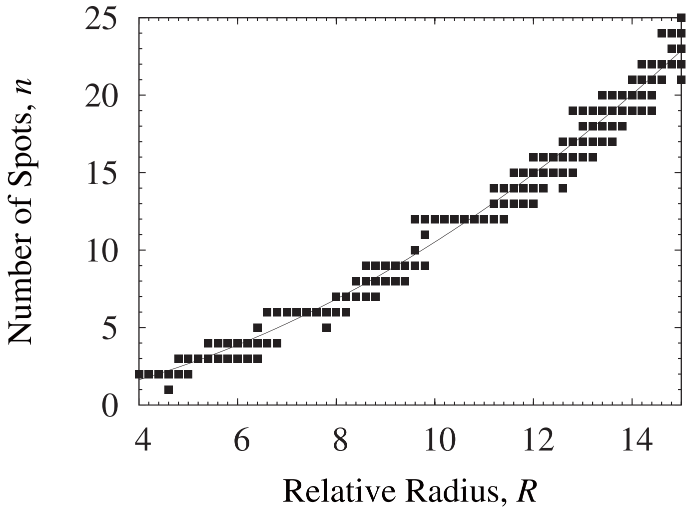

Fig. 4. Dependence of the number of spots on the relative radius.

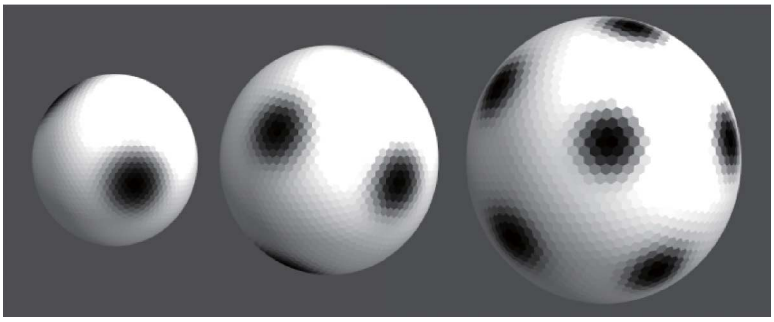

Fig. 5. Examples of numerical solutions rescaled in order to be proportional to R. From left to right, the images correspond to $R = 6$, 8, and 10.

that were obtained during the approximation procedure. The Coulomb energy E is defined by

$$E = \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} \frac{1}{|\mathbf{r}_i - \mathbf{r}_j|}, \tag{5}$$

where $\mathbf{r}_i$ is the position vector of the i-th center, and n is number of points on the sphere. The Coulomb angle is the minimum angular separation between pairs of points. The value is determined as the smallest value among the arccosines of the inner products of all pairs of points.

3. Results

The patterns of both u and v changed with time from the initial state and finally reached stable states. The initial random pattern changed gradually to a stripped pattern, the stripes collapsed, and then spots formed. When R was larger, stable solutions were reached more rapidly than when R was smaller. Below, we will discuss the patterns at $t = 3, 200$, by which time all solutions were considered to be stable.

Figure 2 shows an example of Turing patterns on a spherical surface for $R = 12.0$. These patterns were obtained as stable solutions of u and v. The result are represented by a gray scale. The values are scaled according to a linear transformation for which the minimum value (zero) is black, and the maximum value (one) is white. The spherical surfaces were divided into polygons obtained from the Voronoi tessellation of the grid points. Each polygon was colored ac-