point on an elliptic orbit stays on the ellipse which contradicts convergence to \( p_0 \).

\( W_s \) and \( W_u \) cannot self-intersect.

Then two points would be mapped to \( F \) which would violate invertability.

\( W_s \) (or \( W_u \)) of different fixed points cannot intersect.

\( x_1 = Z x_0 \)
\( x_2 = Z x_1 \)
\( x_3 = Z x_2 \)

\( W_s \) and \( W_u \) of the same fixed point intersect.

However, the stable and unstable manifolds can intersect. This leads to the homoclinic tangle.

Homoclinic point \( W_s \) and \( W_u \) of the same fixed point intersect.

Heteroclinic point \( W_s \) and \( W_u \) of different fixed points intersect.

For \( \delta \to 0 \) there are no many intersections. This leads to the homoclinic tangle and the transition to chaos.