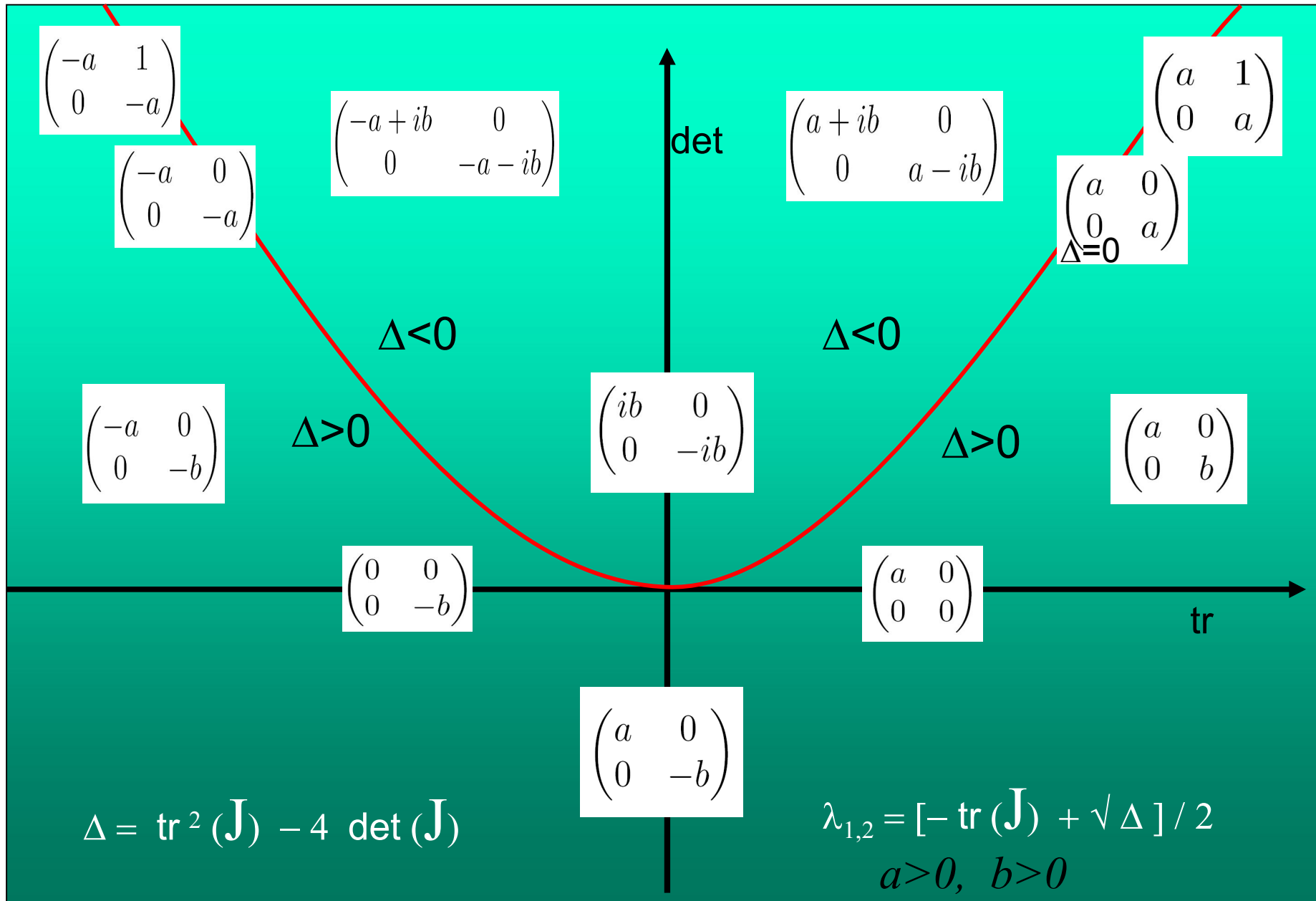
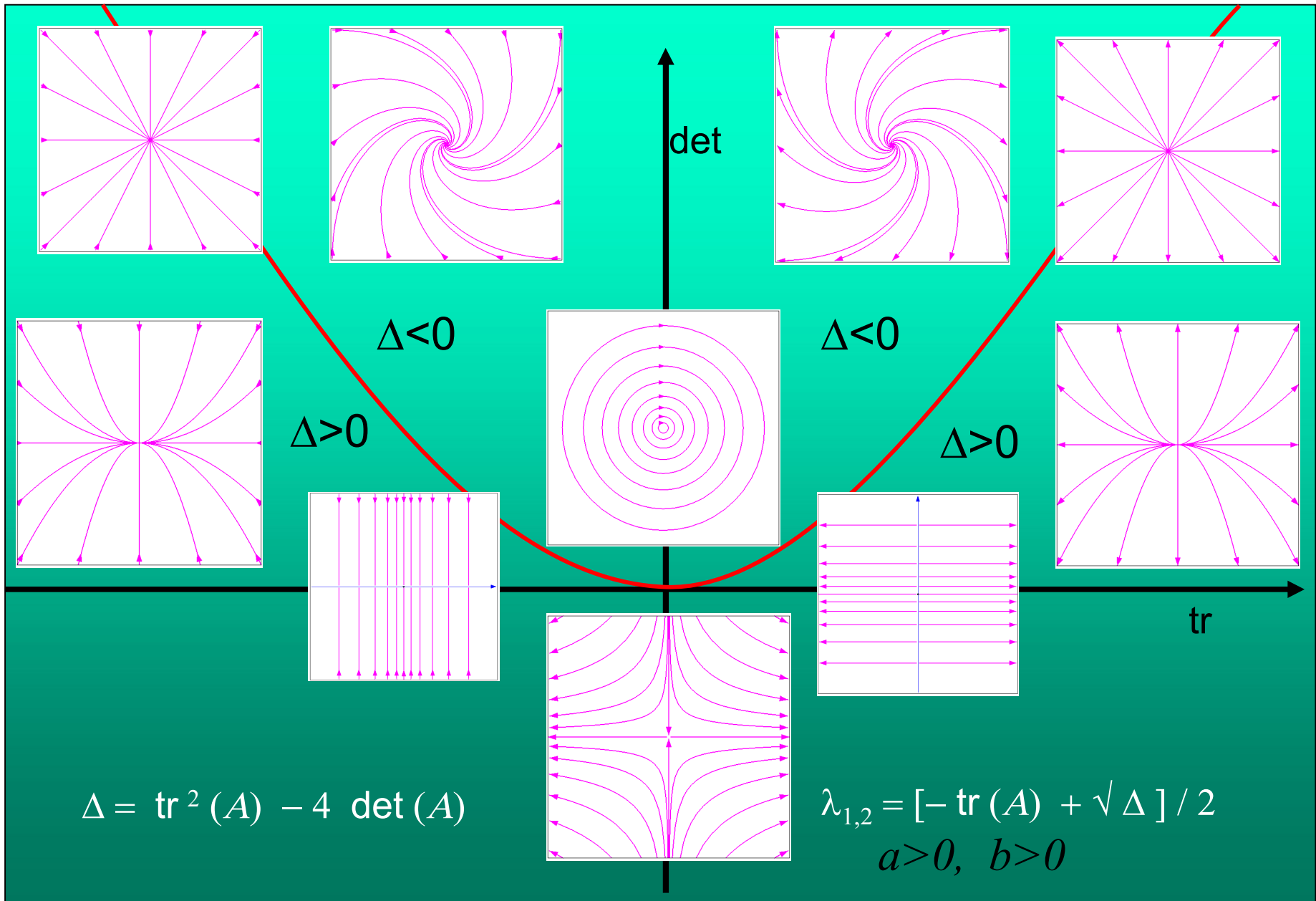


CLASSIFICATION OF FIXED POINTS

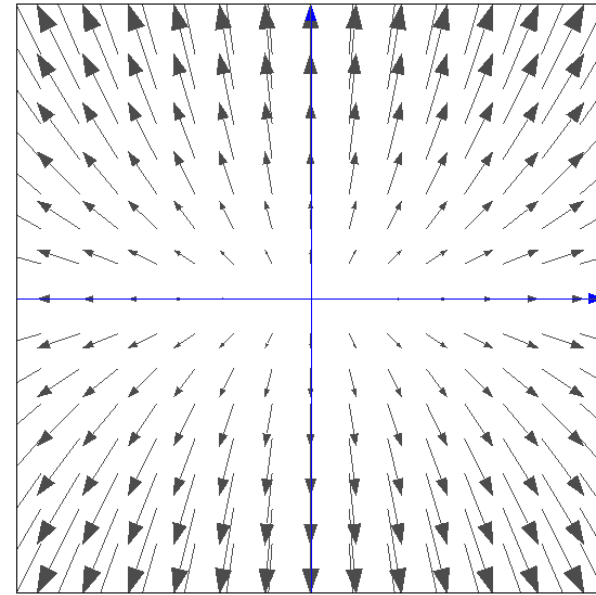




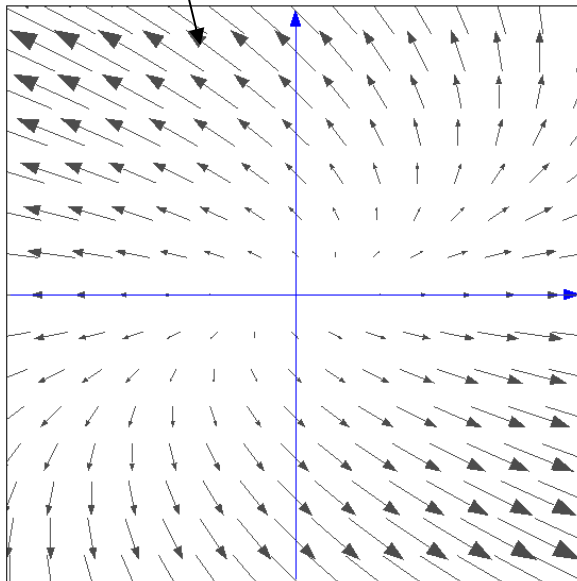
VECTOR FIELD

If the eigenvalues have **positive real part** then the origin is a **Repelling Fixed Point**

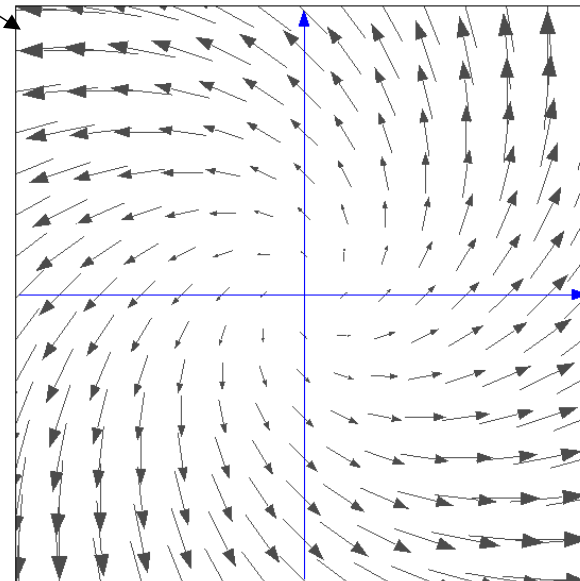
Node



Jordan Node



Focus

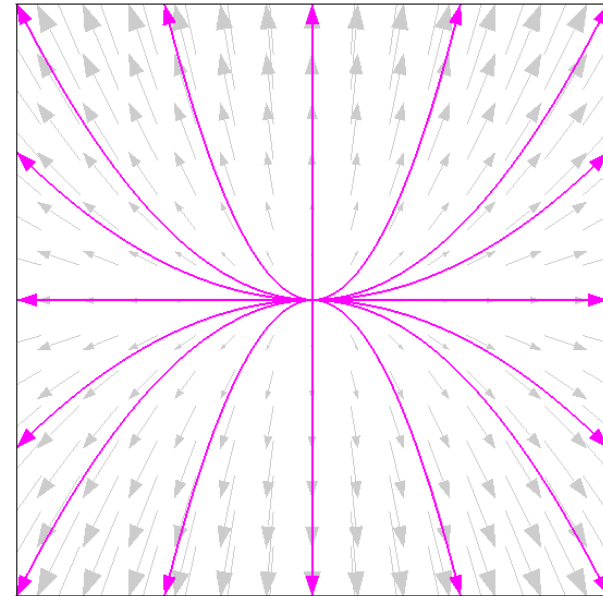


PHASE PORTRAIT

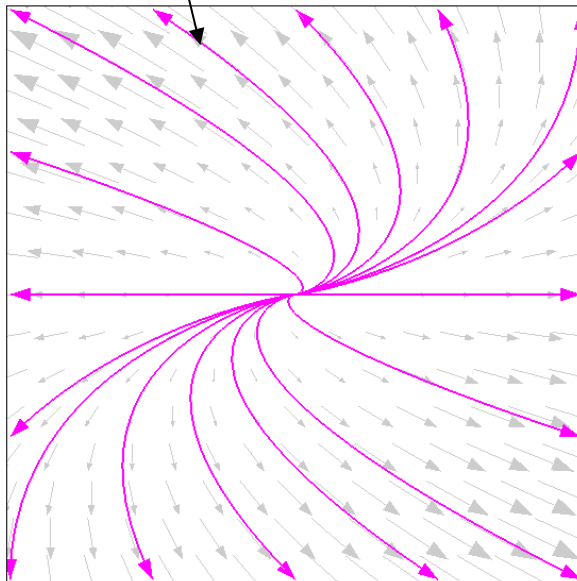
All trajectories go away from the

**Repelling
Fixed Point (Source)**

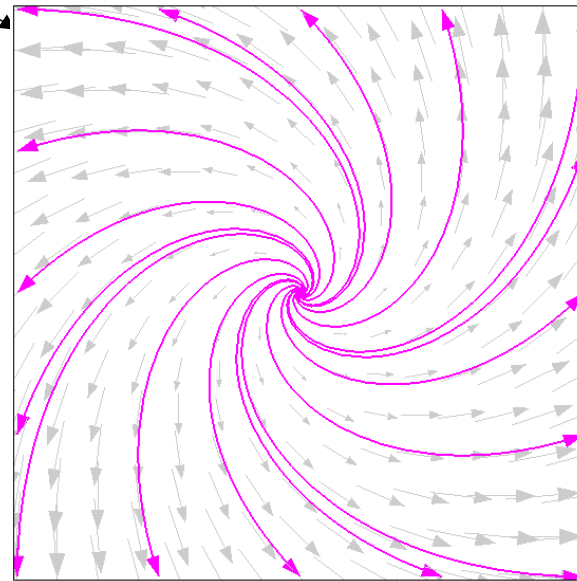
Node



Jordan Node



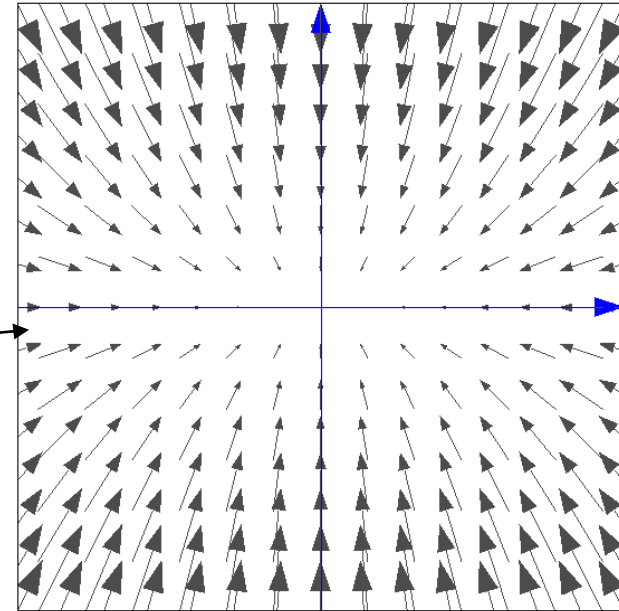
Focus



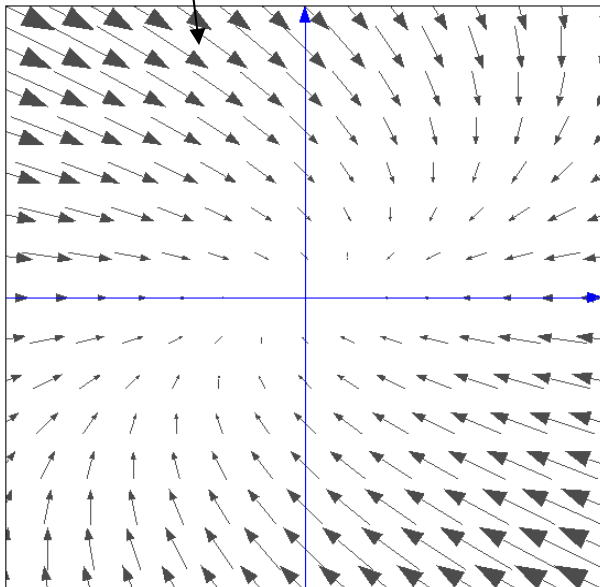
VECTOR FIELD

If the eigenvalues have **negative real part** then the origin is an **Attracting Fixed Point**

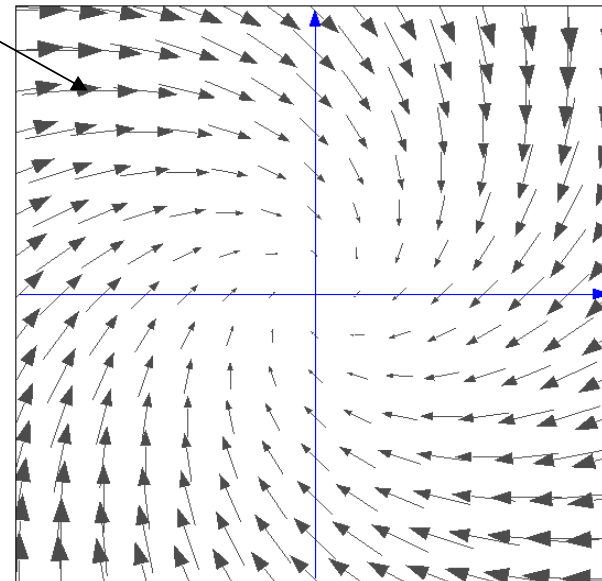
Node



Jordan Node



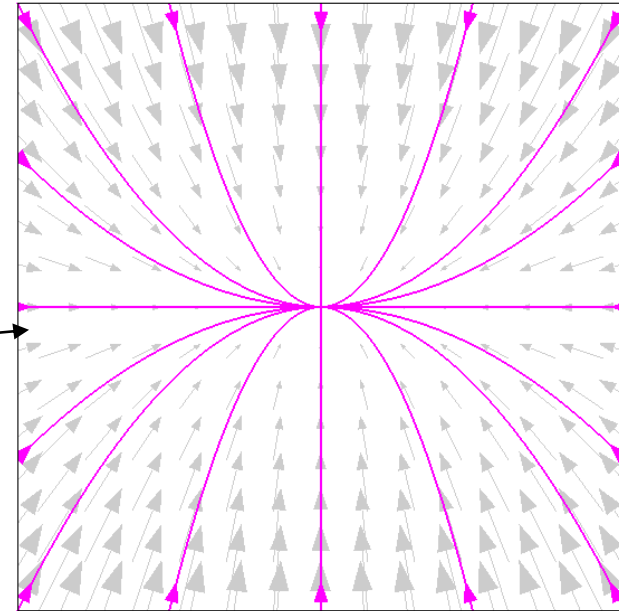
Focus



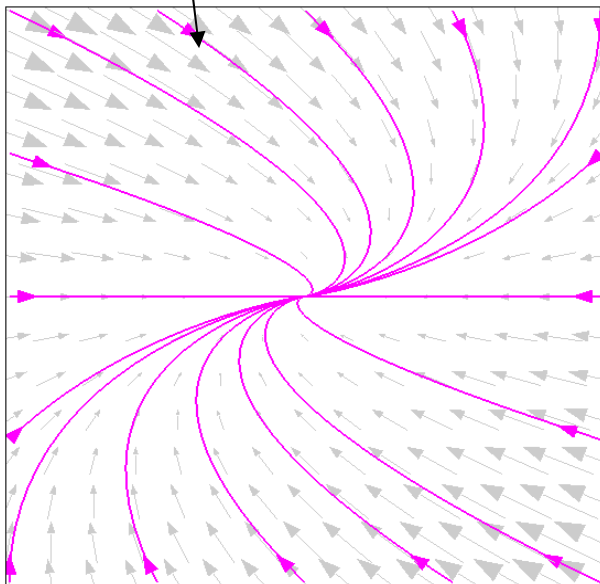
PHASE PORTRAIT

All trajectories go towards the **Attracting Fixed Point (sink)**

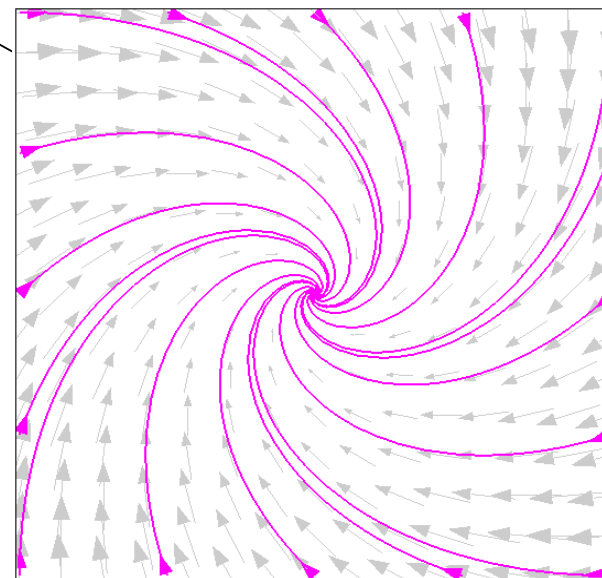
Node



Jordan Node



Focus

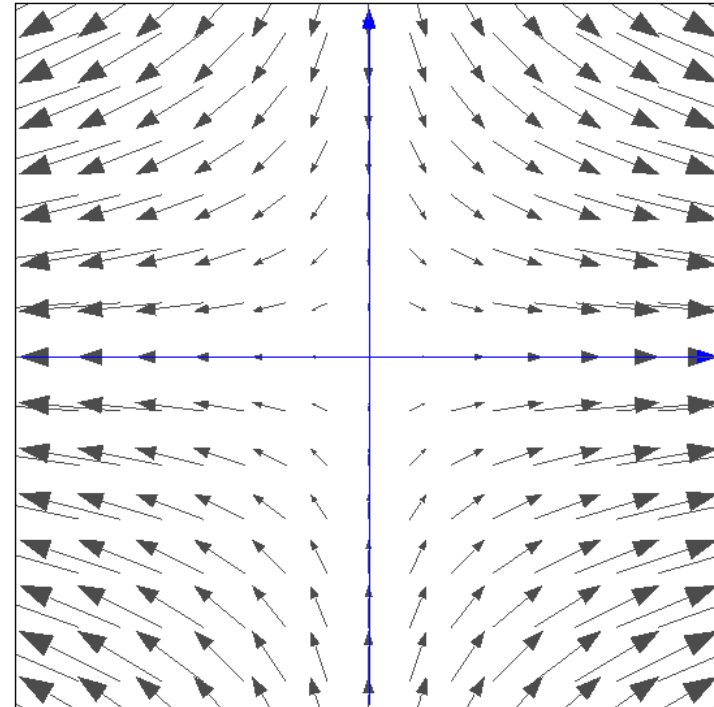


VECTOR FIELD

If the eigenvalues are real **with opposite sign**
then the origin is a
Saddle Fixed Point

Saddle

The origin is a Fixed Point
attracting in one direction and
repelling in the other direction

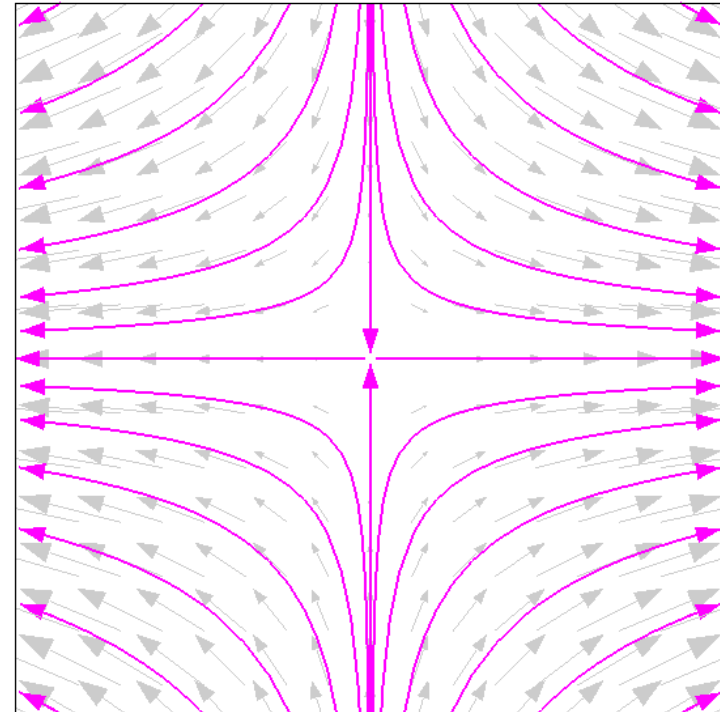


PHASE PORTRAIT

If the eigenvalues are real **with opposite sign**
then the origin is a
Saddle Fixed Point

Saddle

There are two trajectories going
towards the fixed point and two
trajectories going away from it

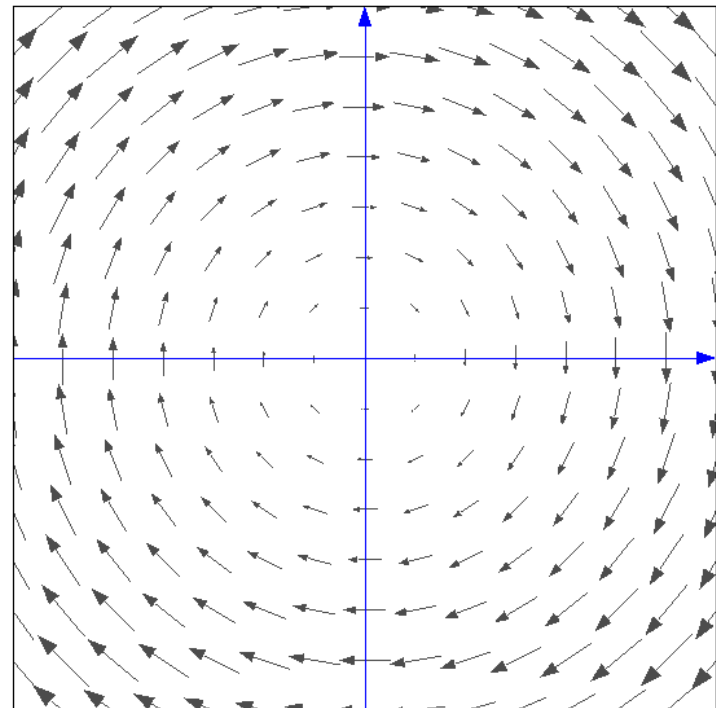


NON HYPERBOLIC: VECTOR FIELD

If the eigenvalues have **zero real part**
then the origin is a
Centre

Centre

The origin is a Fixed Point
neither repelling nor attracting

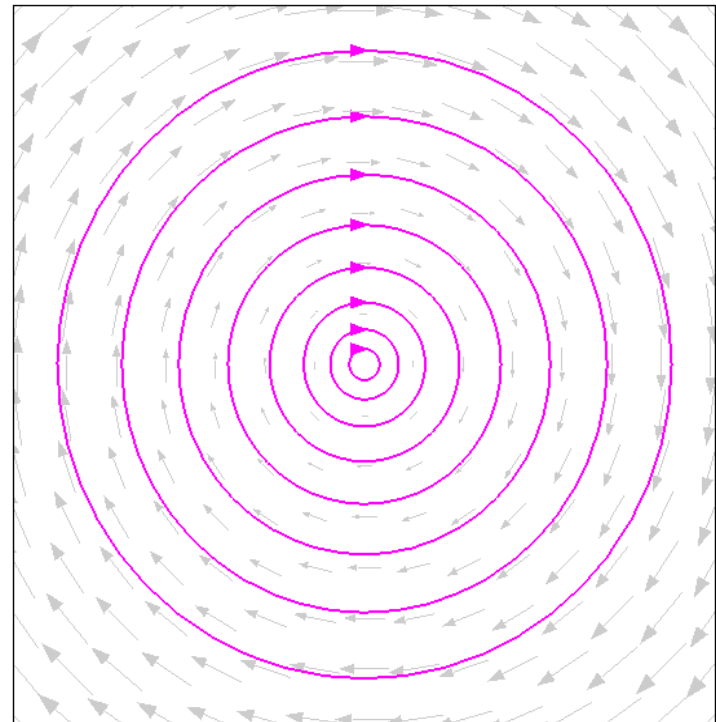


NON HYPERBOLIC: PHASE PORTRAIT

If the eigenvalues have **zero real part**
then the origin is a
Centre

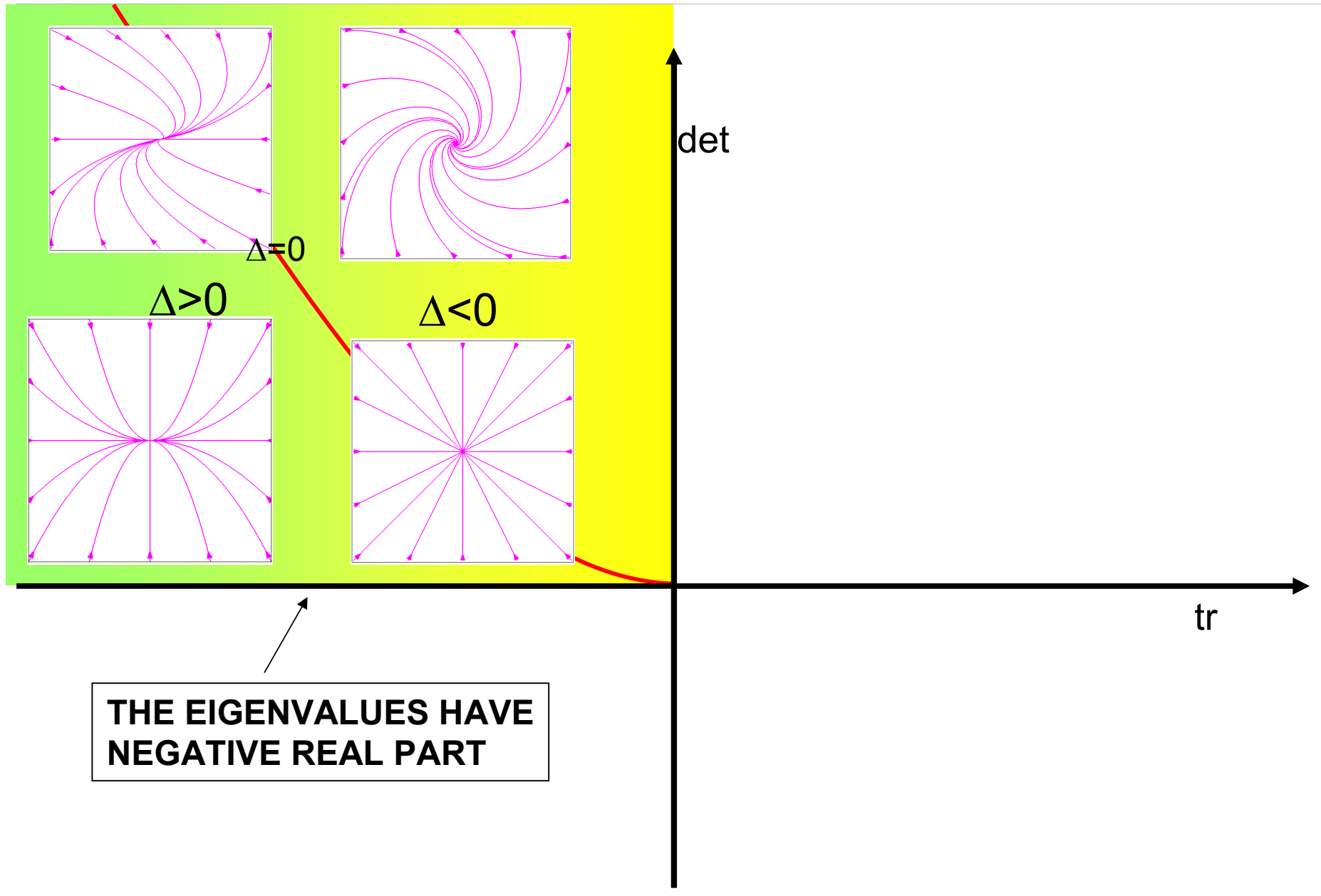
Centre

All trajectories are periodic
around the fixed point



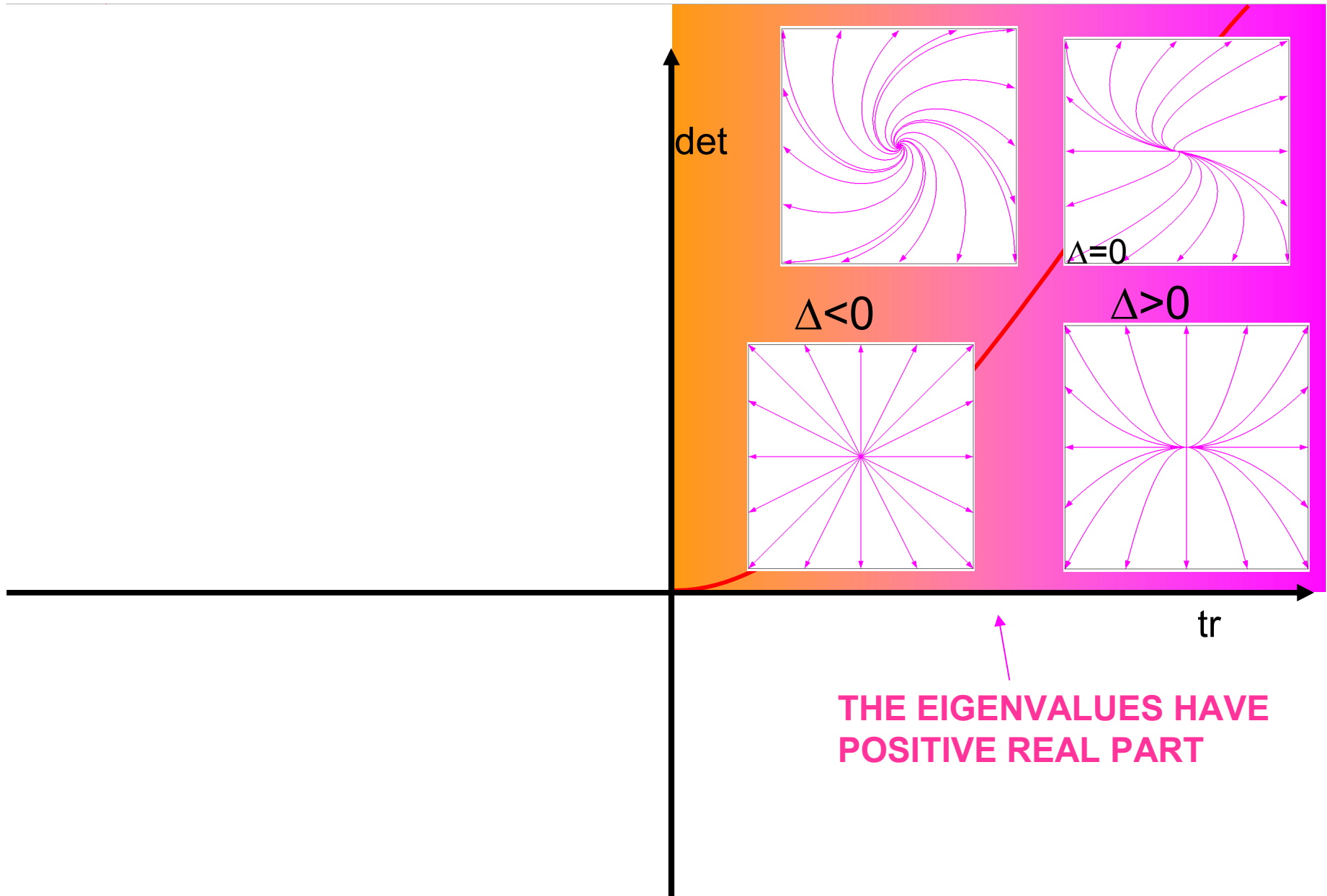
STABILITY

STABLE FIXED POINTS



STABILITY

UNSTABLE FIXED POINTS



HYPERBOLICITY

