

$$\dot{\vec{x}} = A(t)\vec{x}$$

ALL SOLUTIONS
LIAPUNOV STABLE
FOR $t \geq t_0$



EVERY SOLUTION
BOUNDED
AS $t \rightarrow \infty$

$$\dot{\vec{x}} = A\vec{x}$$

(A... $n \times n$ MATRIX)

EVERY SOLUTION
HAS THE SAME STABILITY
AS THE ZERO SOLUTION.

$\exists$ EIGENVALUE λ_i
ST $\operatorname{Re}(\lambda_i) > 0$

$\vec{0}$ UNSTABLE

$\vec{0}$ LIAPUNOV
STABLE

$\operatorname{Re}(\lambda_i) \leq 0$ FOR
ALL EIGENVALUES
 λ_i

EVERY SOLUTION
BOUNDED
AS $t \rightarrow \infty$

$\vec{0}$ LIAPUNOV STABLE.

$\vec{0}$ ASYMPTOTICALLY
STABLE

$\operatorname{Re}(\lambda_i) < 0$ FOR
ALL EIGENVALUES
 λ_i

$\vec{0}$ ASYMPTOTICALLY STABLE