

# **Classification of power system stability**

## **Power system stability**

The stability of an interconnected power system means is the ability of the power system is to return or regain to normal or stable operating condition after having been subjected to some form of disturbance

## **Classification of power system stability**

### **Rotor angle stability**

Rotor angle stability is the ability of interconnected synchronous machines of a power system to remain in synchronism.

### **Steady state stability**

Steady state stability is defined as the ability of the power system to bring it to a stable condition or remain in synchronism after a small disturbance. EE 2351 Power system analysis.

### **Steady state stability limit**

The steady state stability limit is the maximum power that can be transferred by a machine to receiving system without loss of synchronism

### **Transient stability**

Transient stability is defined as the ability of the power system to bring it to a stable condition or remain in synchronism after a large disturbance.

### **Transient stability limit**

The transient stability limit is the maximum power that can be transferred by a machine to a fault or a receiving system during a transient state without loss of synchronism. Transient stability limit is always less than steady state stability limit

### **Dynamic stability**

It is the ability of a power system to remain in synchronism after the initial swing (transient stability period) until the system has settled down to the new steady state equilibrium condition

### **Voltage stability**

It is the ability of a power system to maintain steady acceptable voltages at all buses in the system under normal operating conditions and after being subjected to a disturbance.