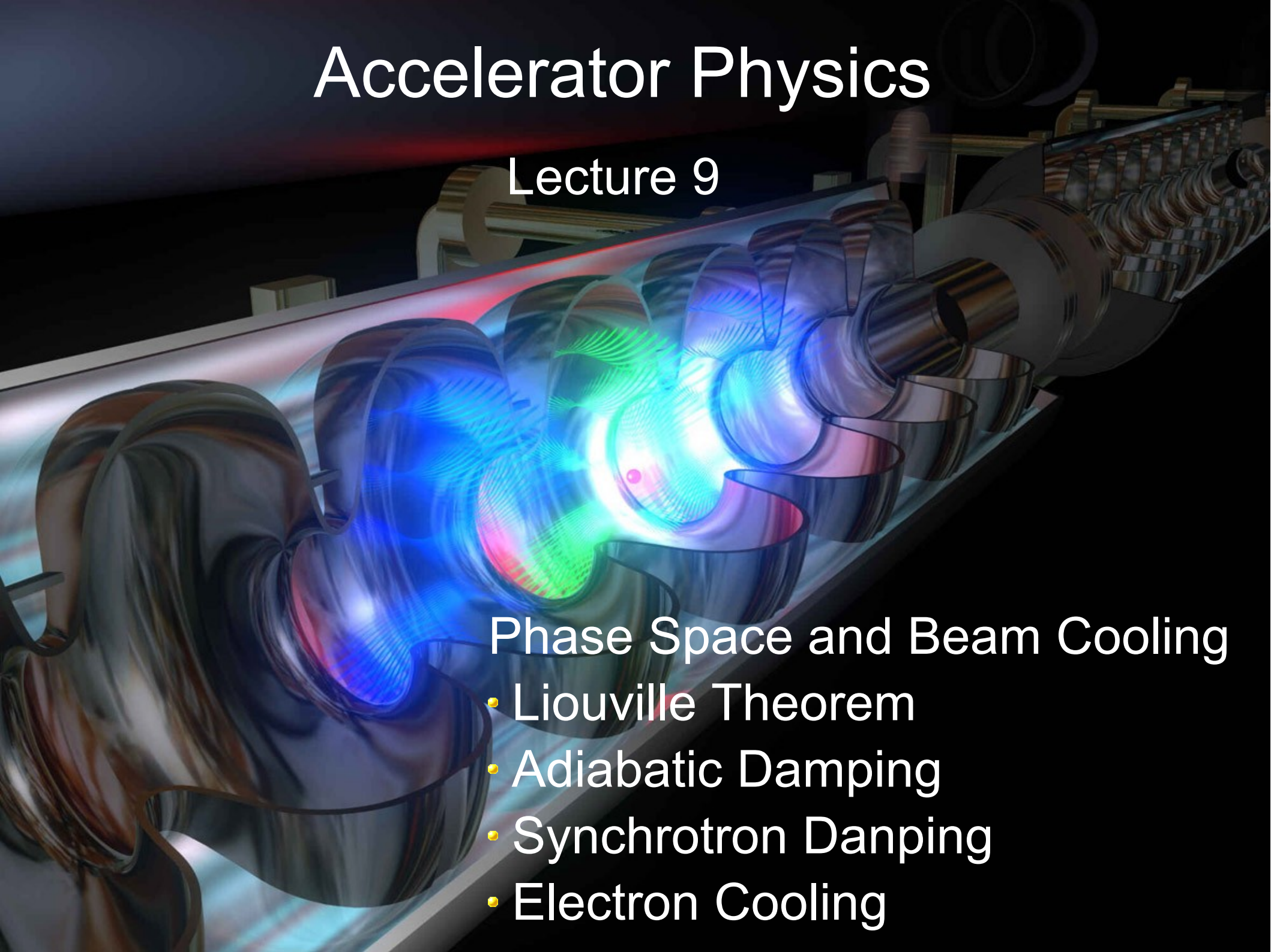


# Accelerator Physics

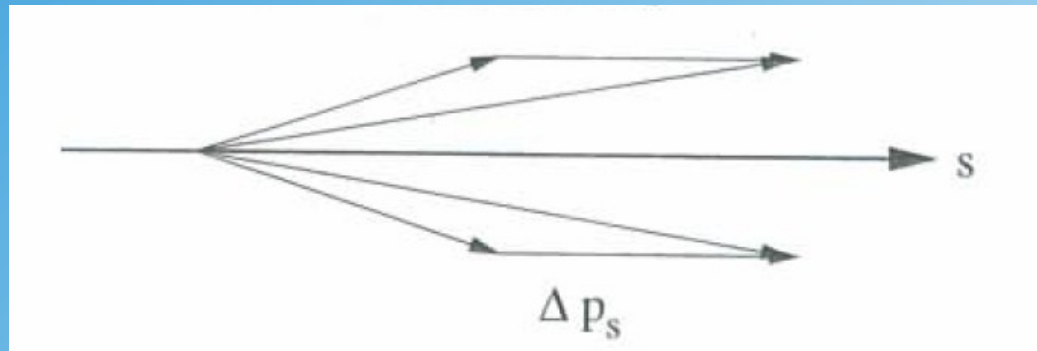
## Lecture 9

### Phase Space and Beam Cooling

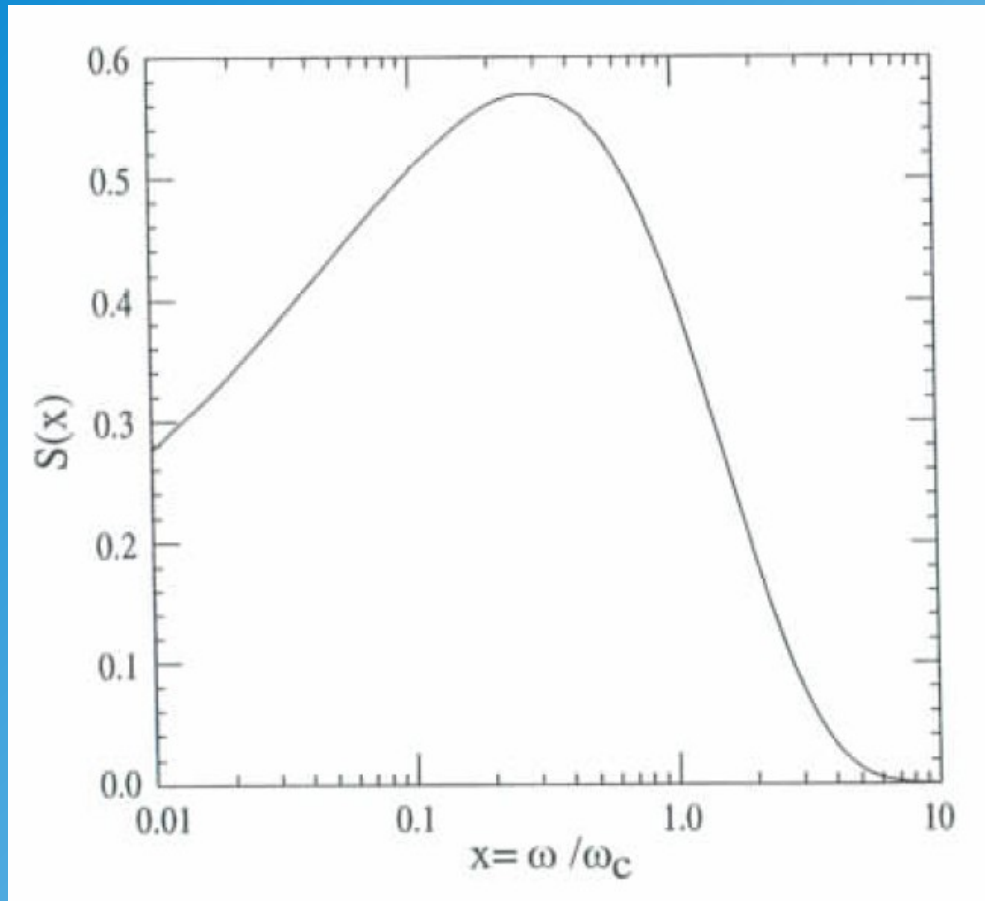
- Liouville Theorem
- Adiabatic Damping
- Synchrotron Damping
- Electron Cooling



# Adiabatic Damping

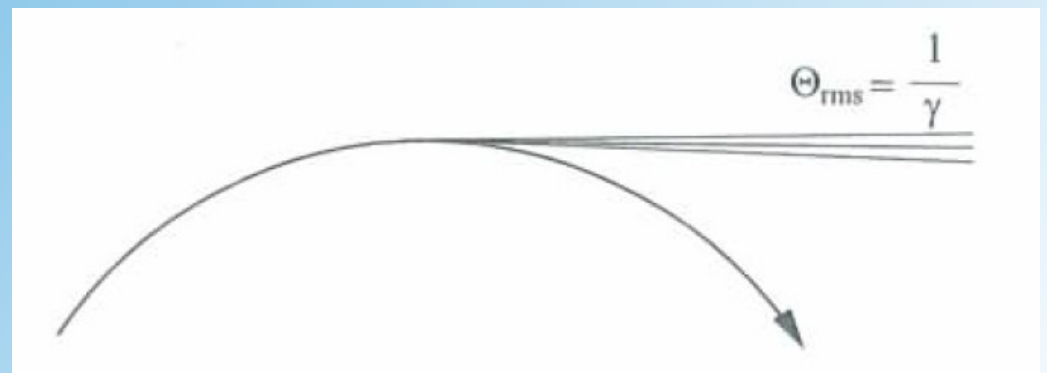


# Synchrotron Radiation Damping



photon energy spectrum

emission of light



# Electron Cooling

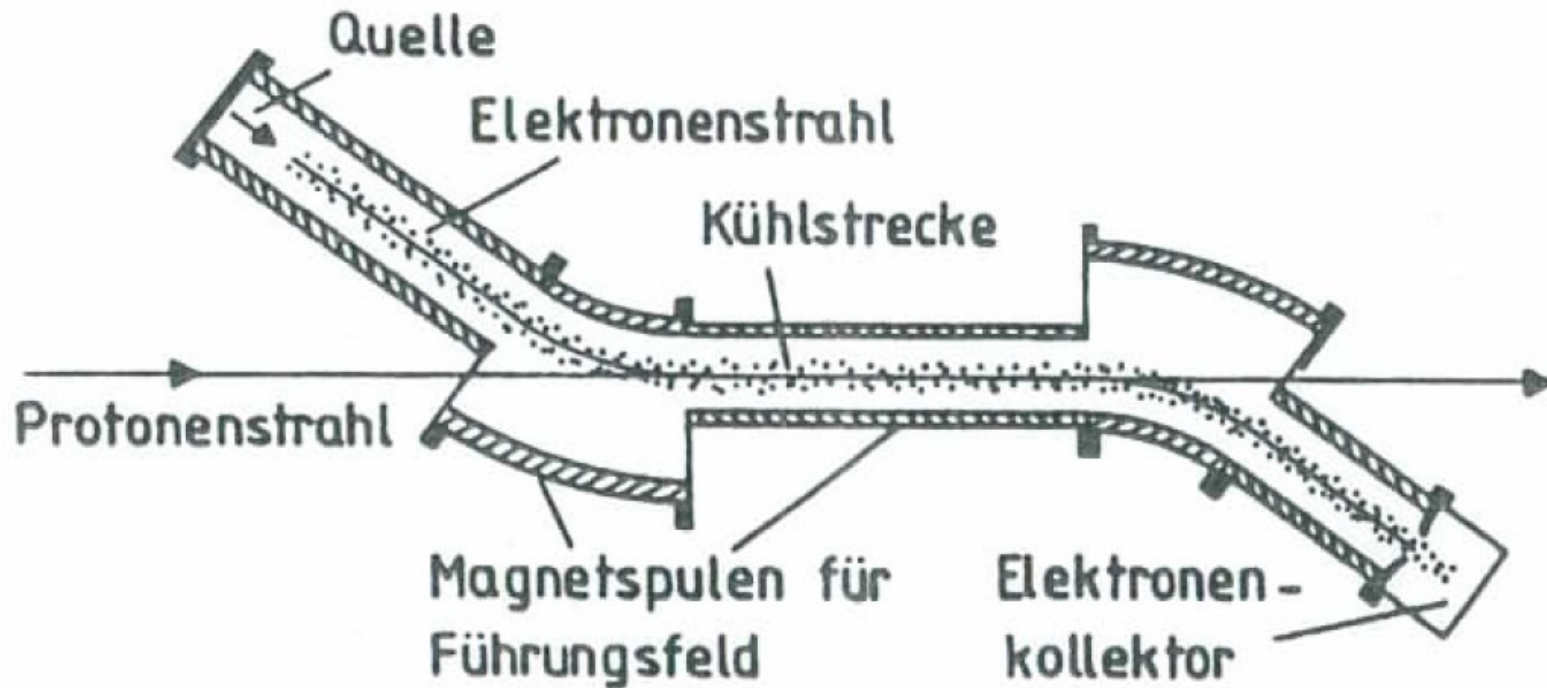
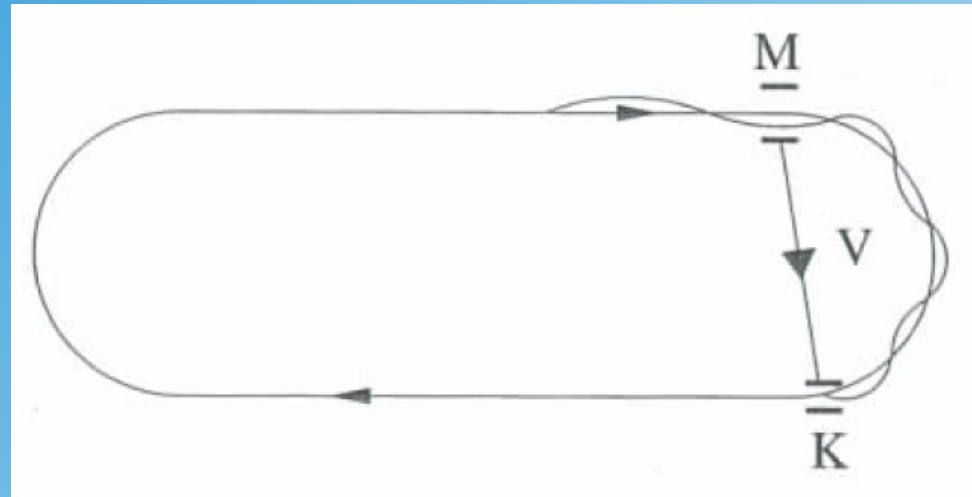


Abb. 10.5. Schema eines Elektronenkühlers. Die Länge der Kühlstrecke liegt üblicherweise bei 1 m bis 2 m



# Stochastic Cooling

M=Monitor



K = Kicker Magnet

