

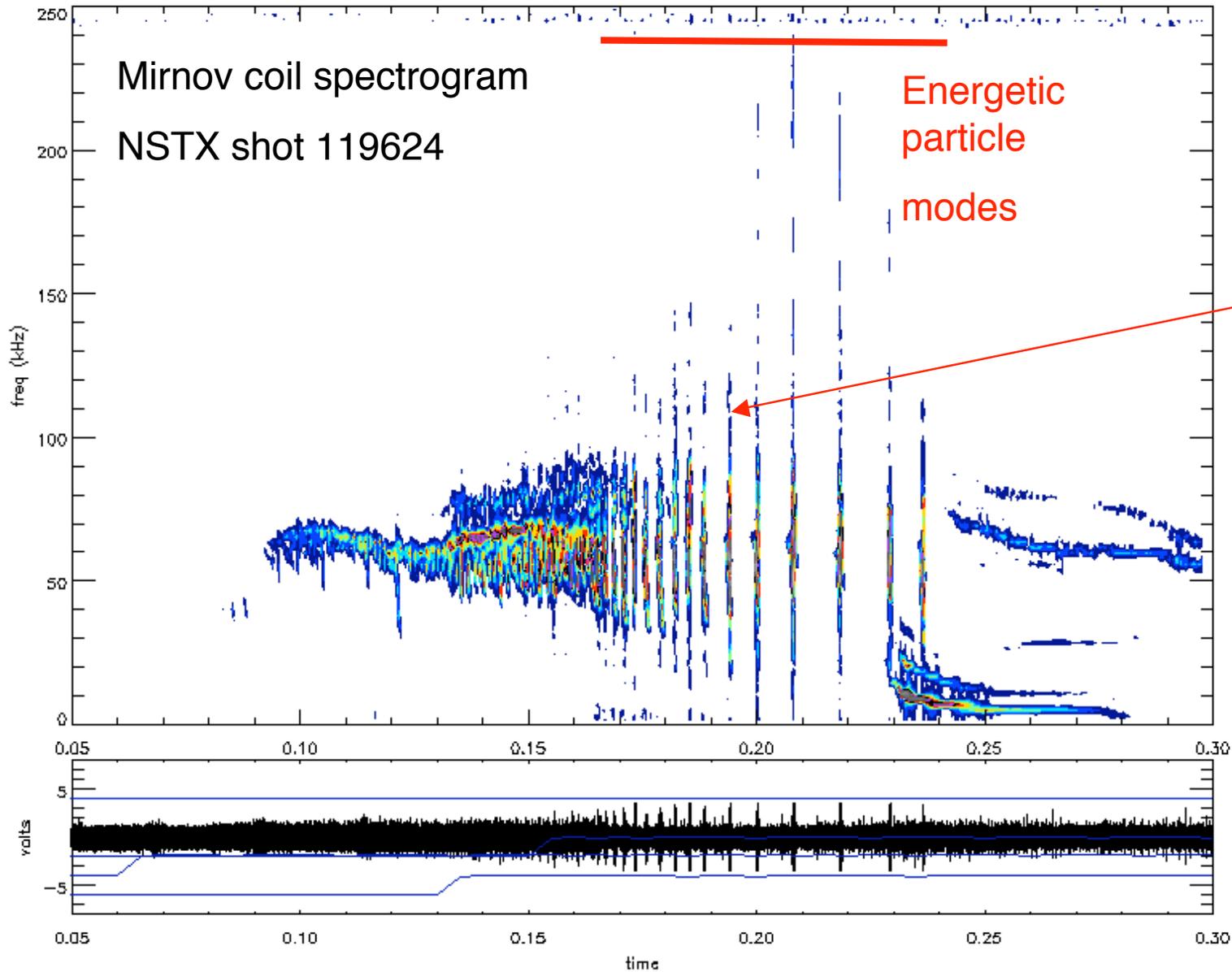
# Neutral Beam Ion Loss During Energetic Particle Modes (fishbones)

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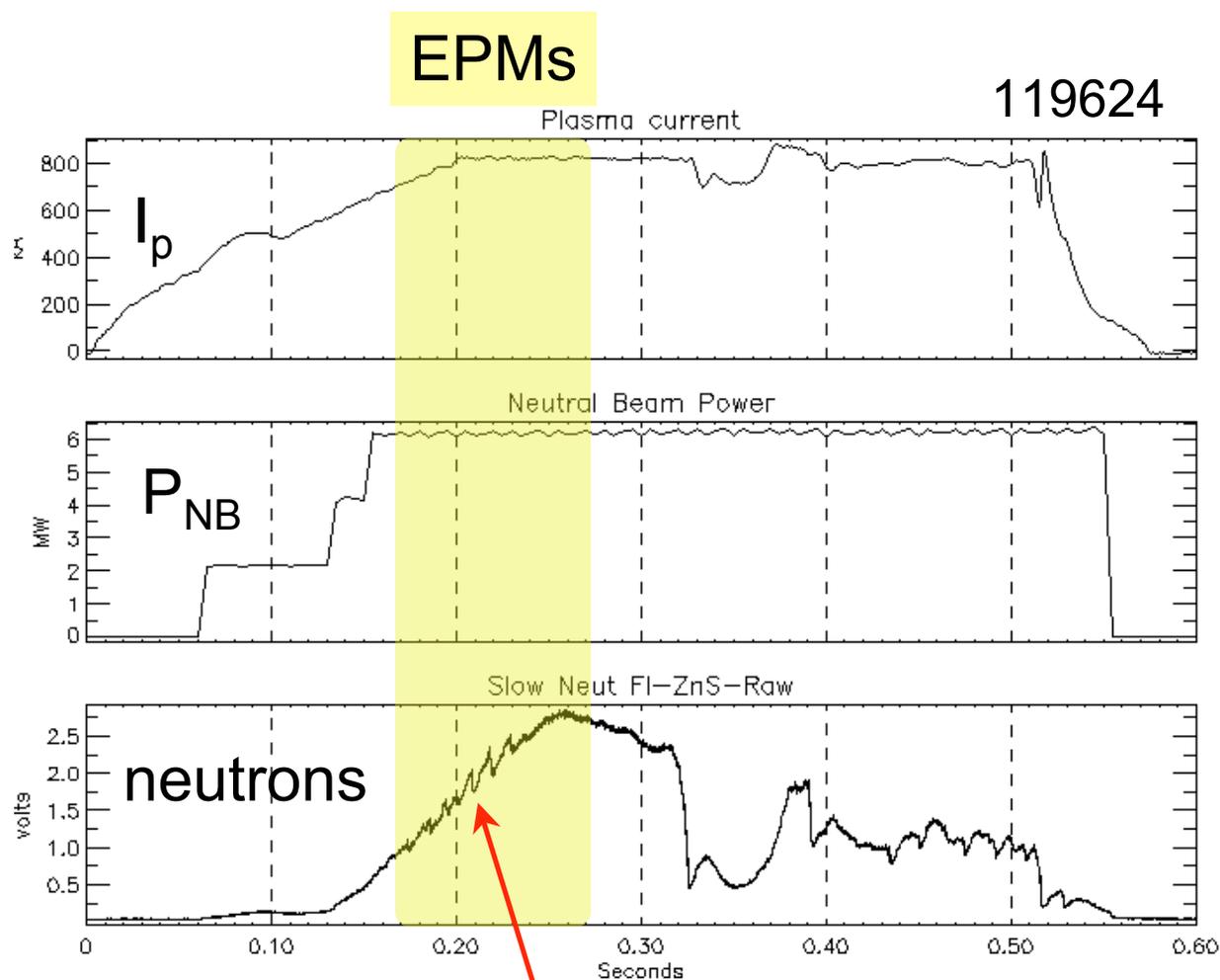
NSTX Results Review  
July 23-24, 2007

# EPMs occur frequently

shot 119624, device: \bdot\_11dmivvhn2\_raw

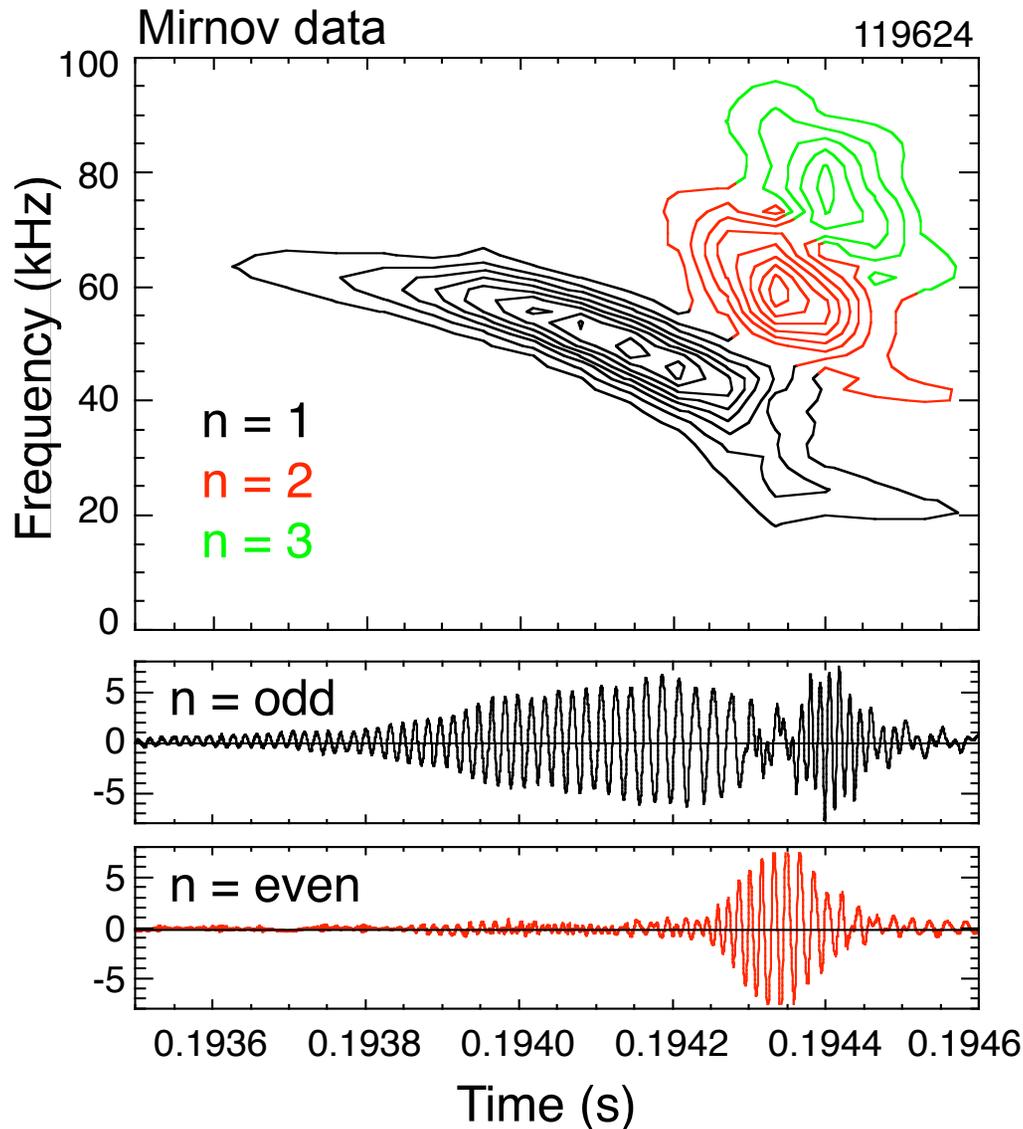


# Energetic Particle Modes produce strong beam ion loss



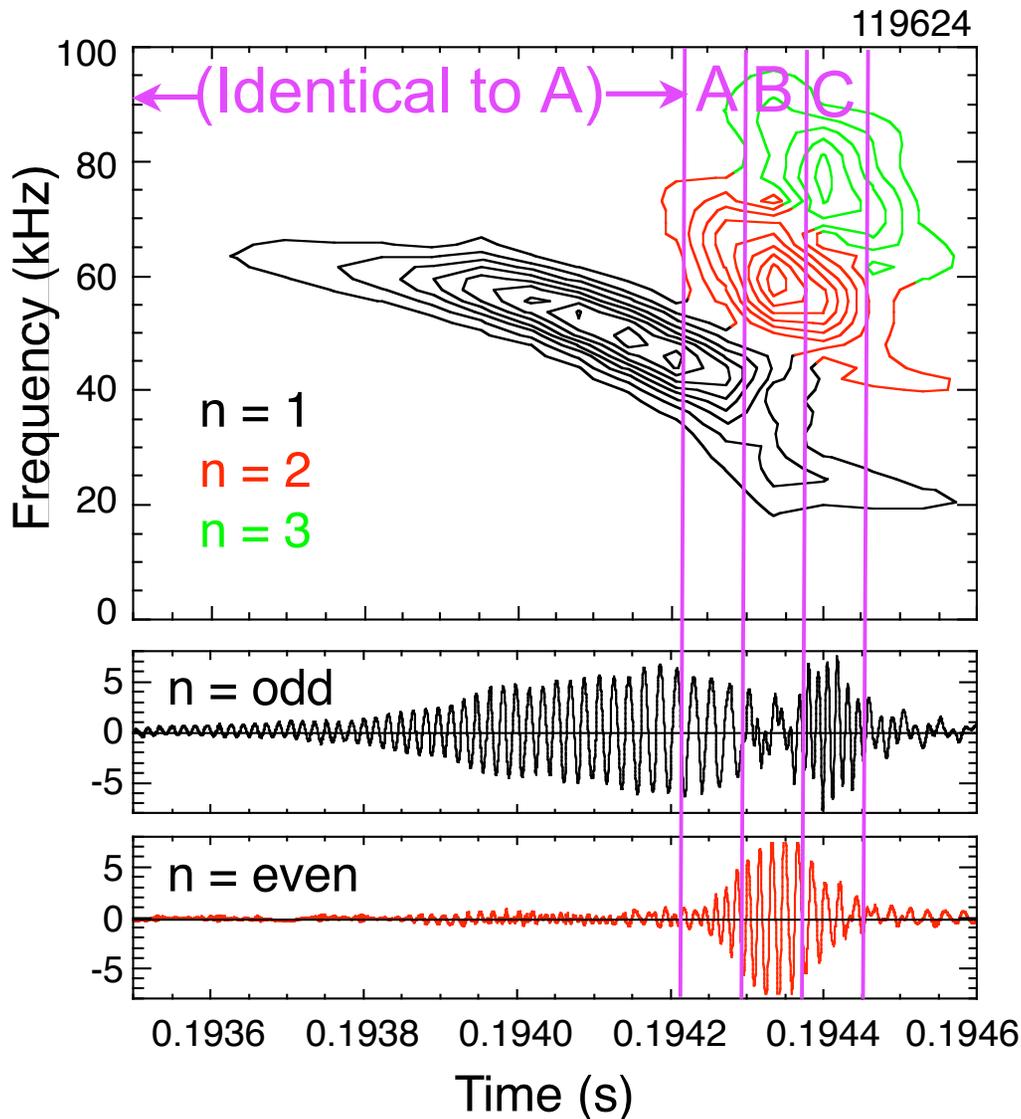
Note repeated drops in neutron rate: 13% at 194 ms

# Event at 194 ms has frequency chirping, multiple n values

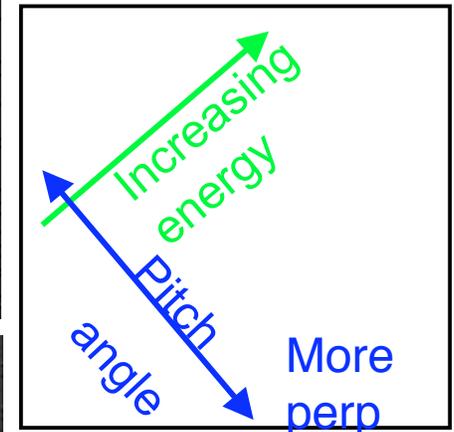
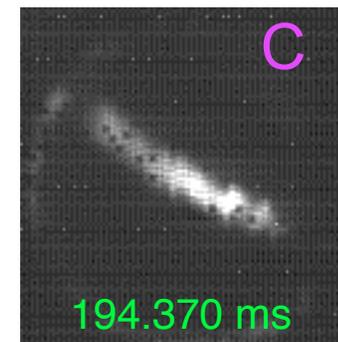
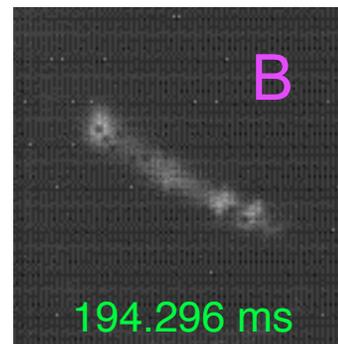
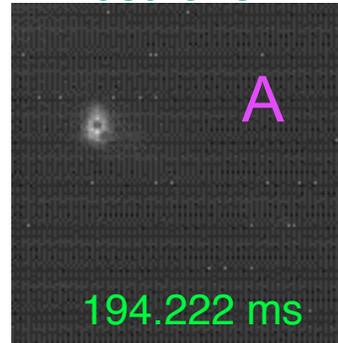


- n=1 chirps 65 to 40 kHz in 500  $\mu$ s
- n=1, 2, & 3 all present

# Frequency chirping does not seem to affect loss characteristics



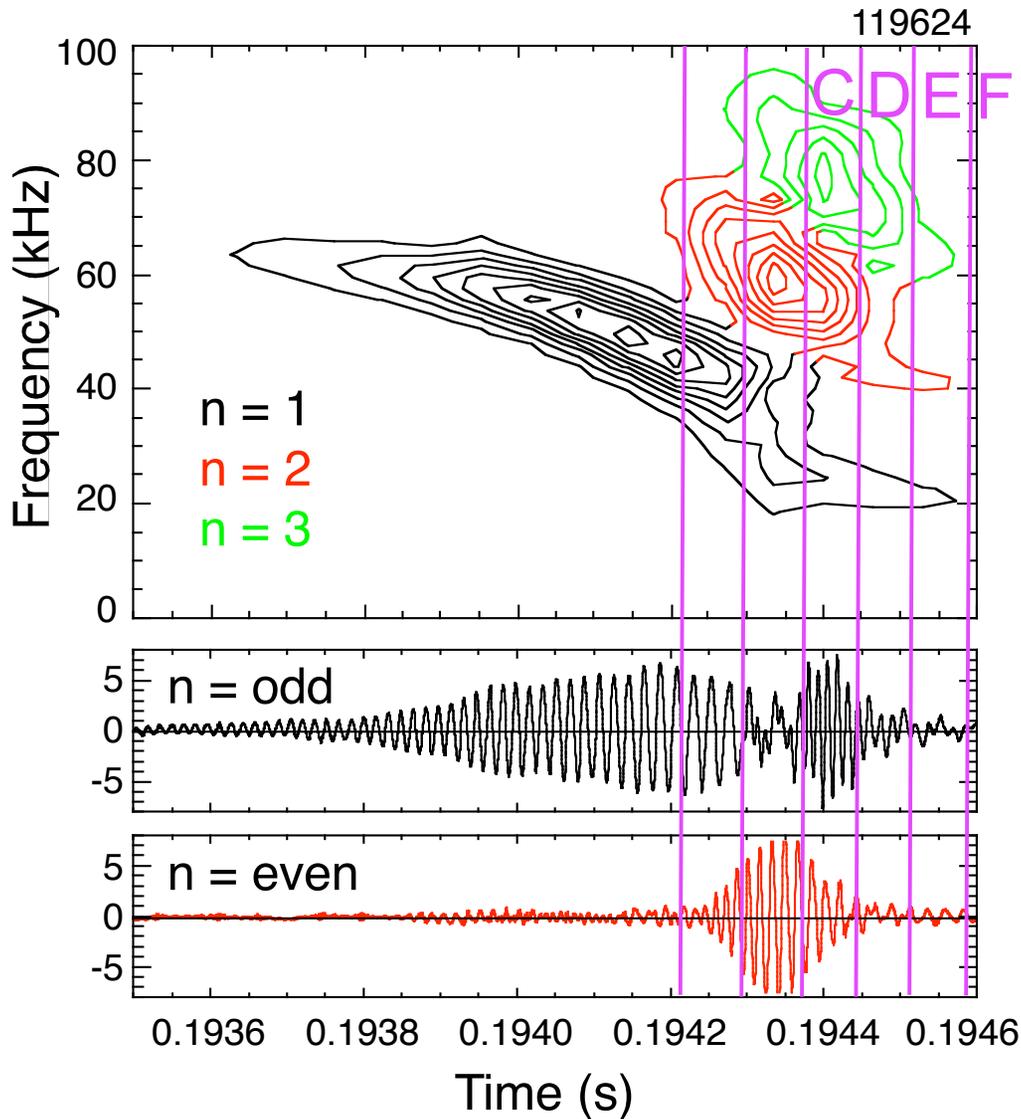
Lost ions



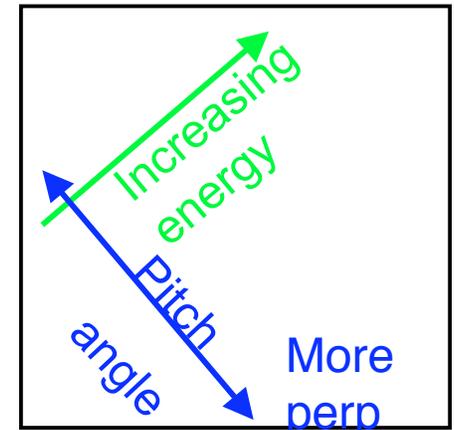
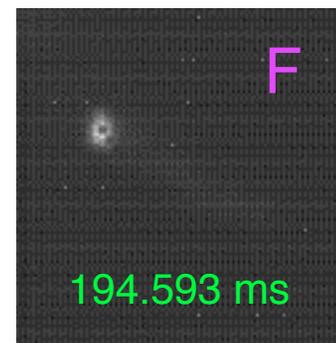
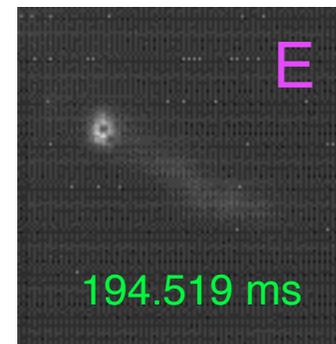
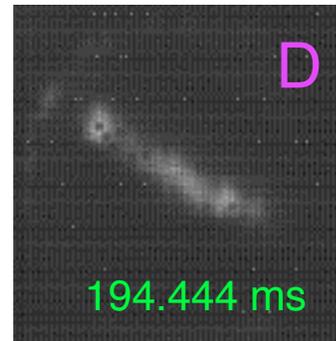
Key to images

13,500 frames/s

# But broad pitch loss occurs when multiple modes overlap in time



Lost ions



Key to images

13,500 frames/s

Identical to A