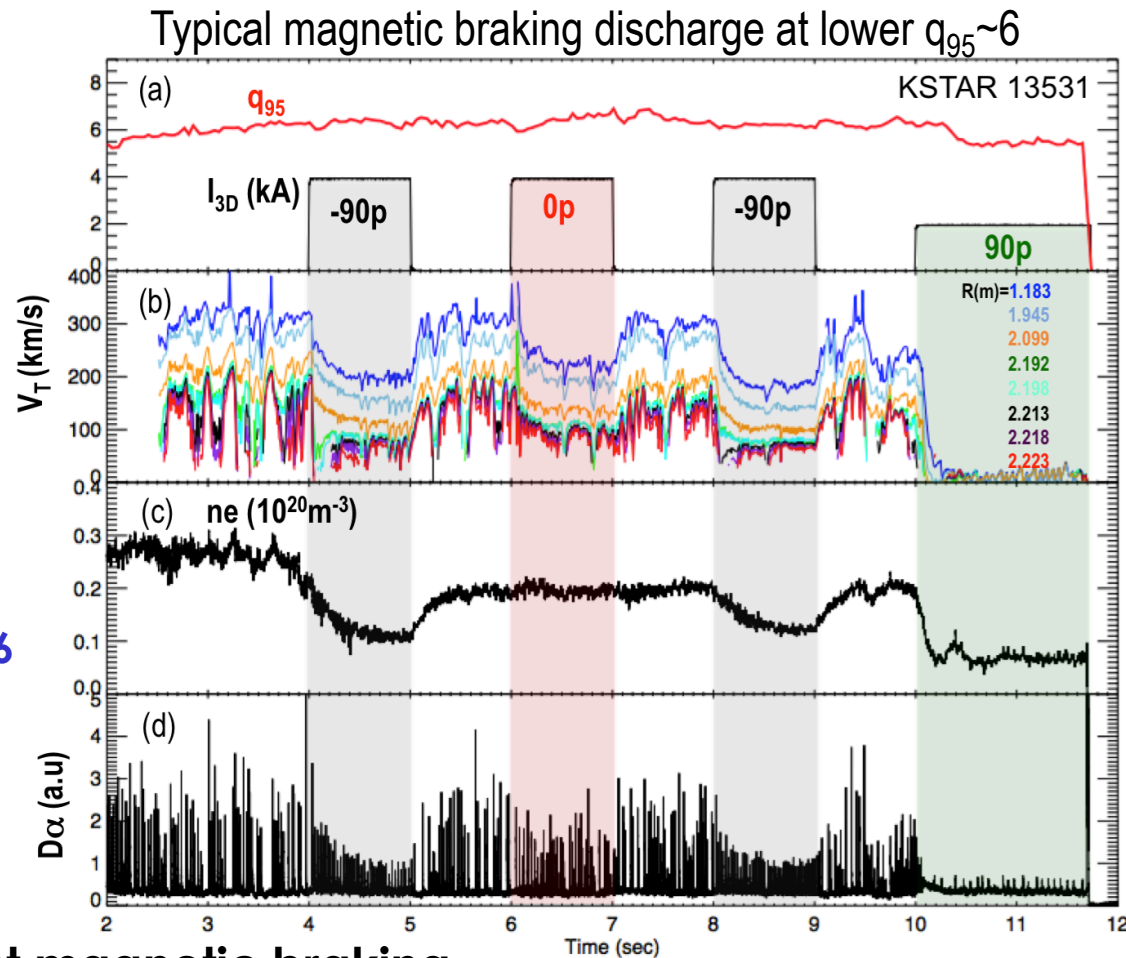


Characteristics of Magnetic Braking Depending on 3D Field Configuration in KSTAR (EX-P/4-9) : Kimin Kim (KAIST) et al.

- Resonant-type magnetic braking by -90 phasing observed
 - Strong density pump-out, confinement degradation with ELM mitigation, due to excitation of kink-response
- Strong resonant plasma response by +90 phasing
 - Severe confinement degradation and disruption by locked modes at low $q_{95} \sim 6$
 - Resonant transport by +90 phasing was significantly modified to non-resonant transport at high $q_{95} \sim 7.2$
- 0-phasing achieved quiescent magnetic braking
 - Global rotation braking (momentum transport), no density pump-out (particle transport) → Slight increase of stored energy



Characteristics of Magnetic Braking Depending on 3D Field Configuration in KSTAR (EX-P/4-9) : Kimin Kim (KAIST) et al.

-90 phasing: **Excitation of kink-response**, predicted by ideal plasma response, explains resonant plasma response (density pump-out), unexpected in vacuum analysis

0 phasing: Overall, non-resonant magnetic braking can be achieved, and weakly depends on q_{95} and pitch-alignment

90 phasing: Strong resonant responses at low q_{95} become weak at high q_{95} due to shielding of kink response, explaining quiescent magnetic braking at $q_{95} \sim 7.2$

