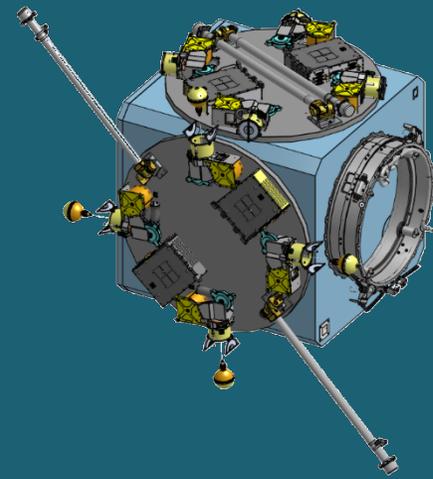
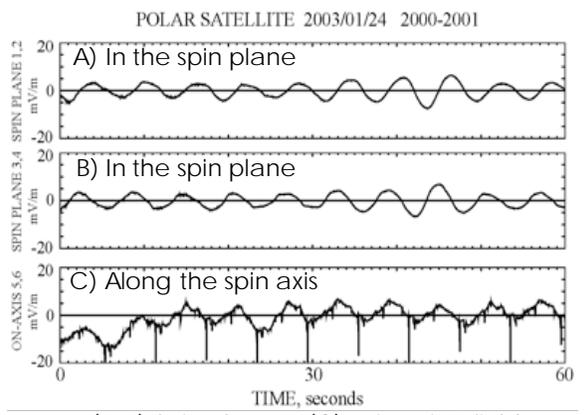


# MOTIVATION

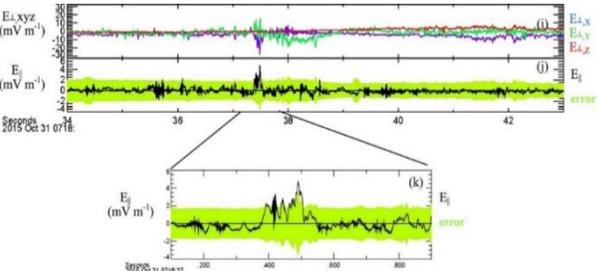
- Uncertainty in the parallel E-field: usually greater than measured value in existing designs
- Closure of many significant science questions hampered by the lack of accurate 3D E-Fields (Shock, reconnection, auroral acceleration region, etc.)



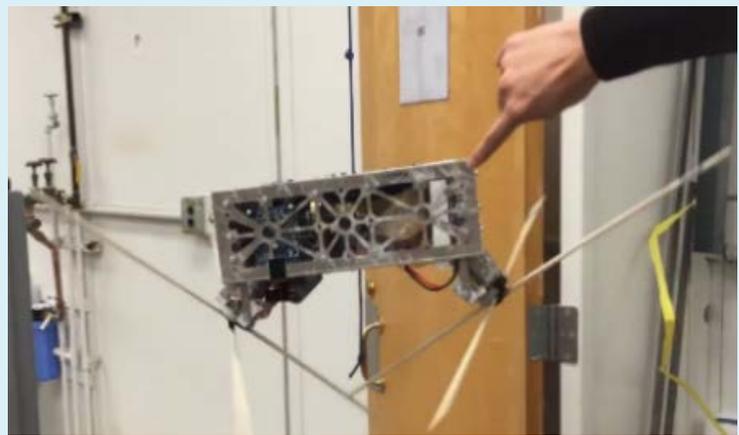
We propose a new instrument design to measure all electric field components with high accuracy – including the parallel E-field.



(A-B) Spin plane & (C) spin axis E-field components measured by Polar.  
**Spin Plane Signal = Geophysical Signal**  
**Spin Axis Signal = Large Spin Periodic Error**  
**=> Large Uncertainty in 3D E-Field**



(From Øieroset et al., 2016) MMS (i) perpendicular E-field, (j) parallel E-field (k) zoom-in. Uncertainty is in green.  
**Uncertainty in  $E_{\parallel}$  = Greater than Value**



## GROTIFER

- Leverages 50+ years of expertise in delivering highly accurate spin plane E-field measurements
- Uses Twin Orthogonal Rotating Platforms to make 4 instantaneous measurements of the 3D E-Field
- Designed to fit in a 27U CubeSat

Meet Grotifer: a CubeSat that Will Provide Highly Accurate Three-Component Electric Field Measurements throughout the Heliosphere  
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