# Twitch 031.1
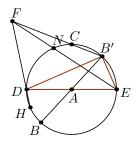
## Evan Chen

### Twitch Solves ISL

Episode 31

## Problem

$\triangle BB'C$ is inscribed in circle $\omega$ with center $A$ ($\angle BCB' = 90°, \angle CB'B \geq \angle CBB'$). Line $\alpha$ passes through $A$ and is perpendicular to $CA$. Line $\alpha$ intersects circle $\omega$ at $D$ and $E$, where $D$ lies on minor arc $BC$. The intersection of ray $B'C$ through $C$ and the angle bisector of $\angle B'ED$ is $F$. Line $FD$ intersects circle $\omega$ at $H \neq D$. Show that line $HA$ is the perpendicular bisector of $\overline{BD}$.

## Video

## Solution

The point $F$ is the $E$-excenter of $\triangle EB'D$.



The end.