

# Cadence Magnets

And Why InfoCrank Uses Them

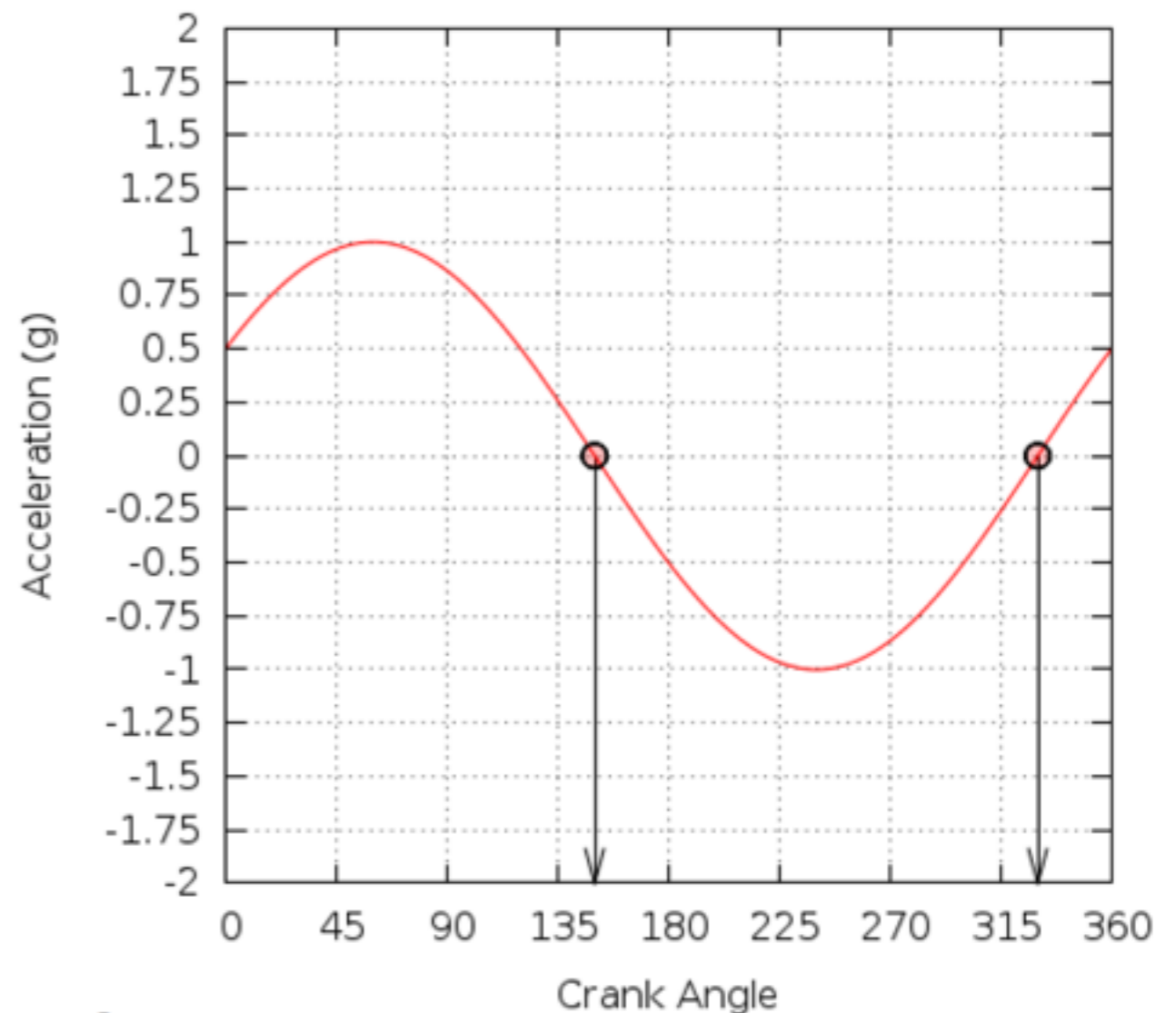


# Accelerometers

- Low power consumption
- Stand alone as a cadence measuring tool
- Don't require magnets or an encoder wheel on the frame

They seem to be a great, "modern" way to measure cadence on a bike, so why doesn't InfoCrank use them?

Cadence Sensing Using Accelerometers  
Cadence Triggers on Zero Crossings - Noise Free Signal

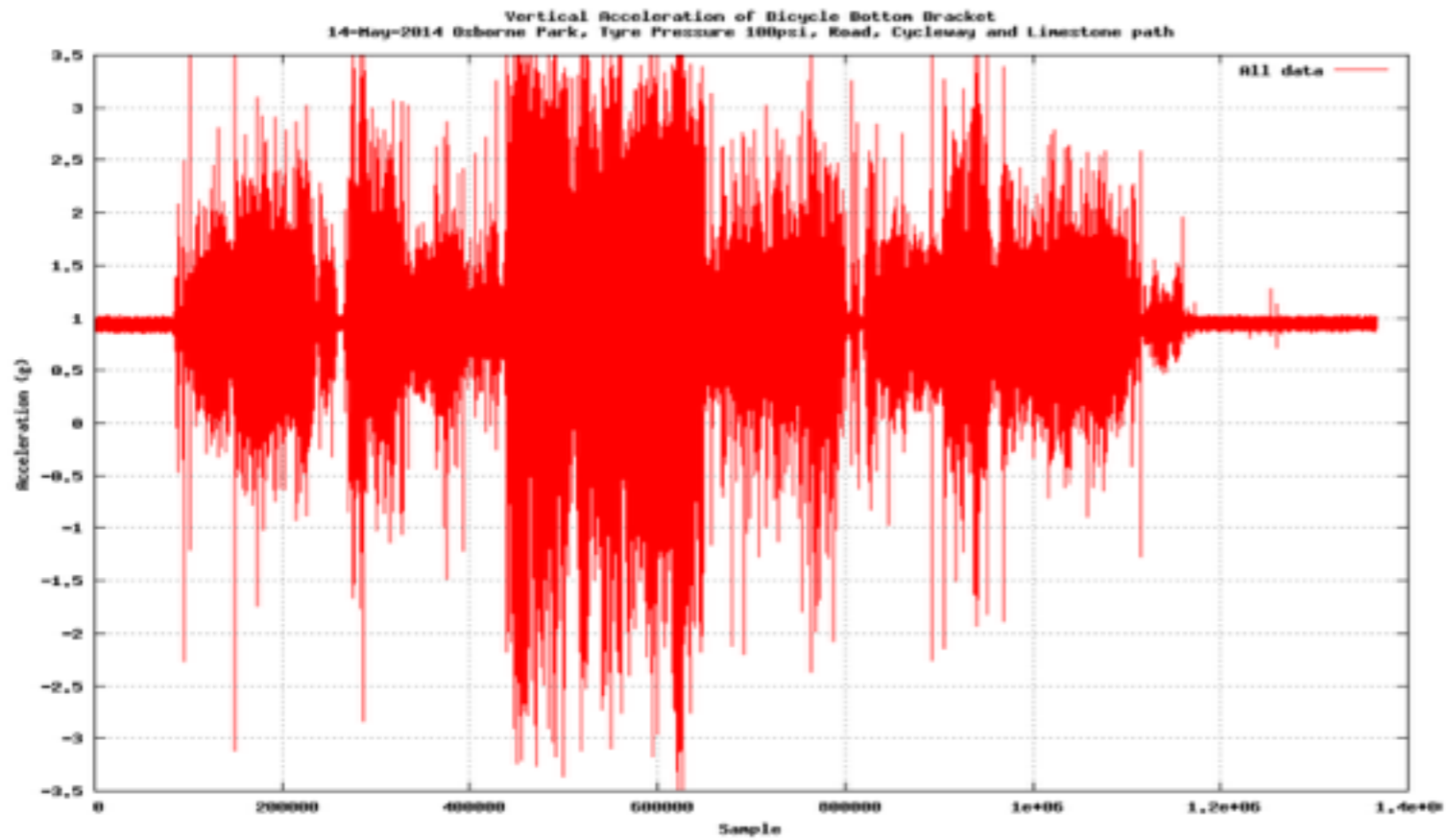




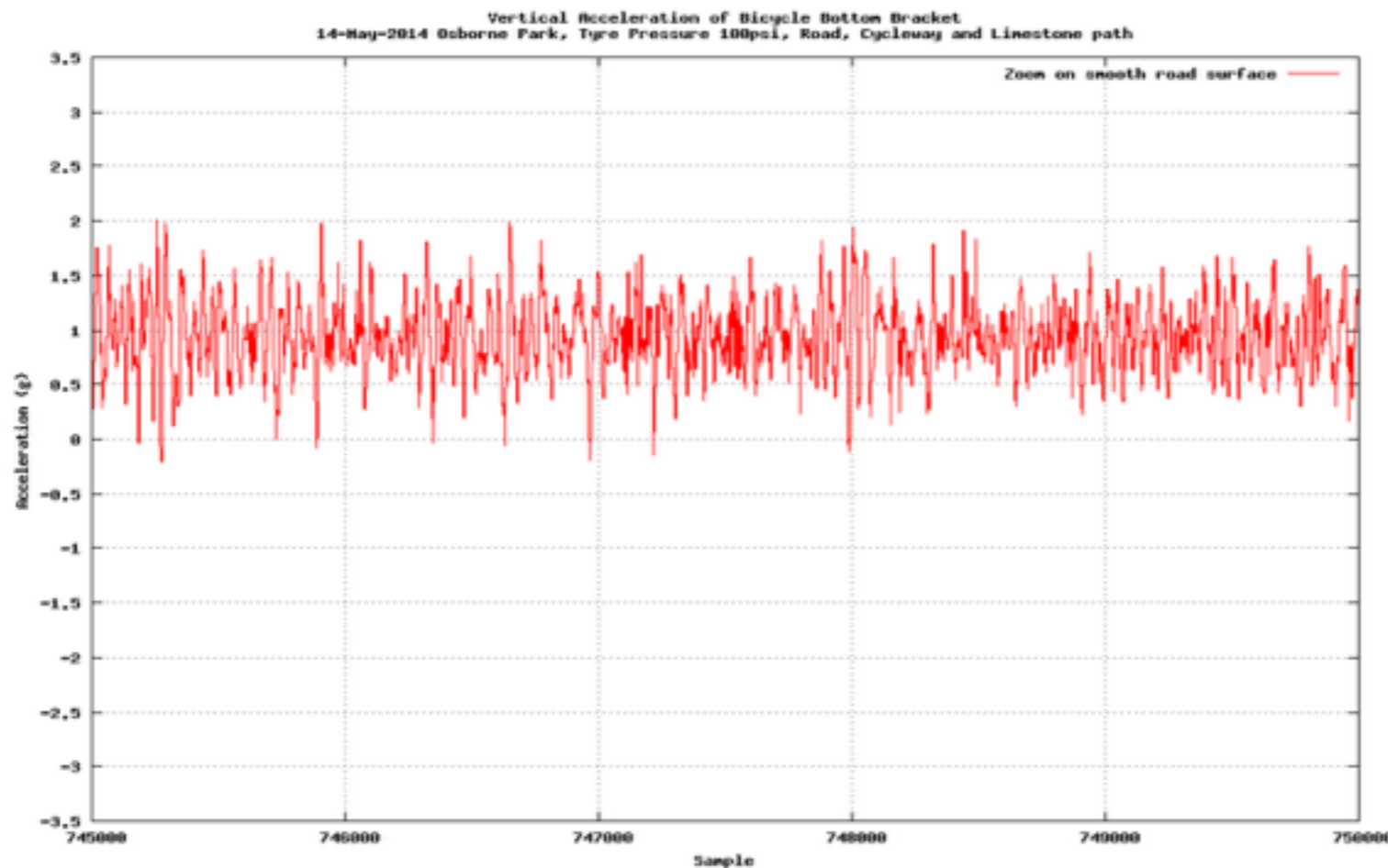
# Road Vibration

Unfortunately, “noise free” signals are not the norm. We ride bikes on the road, and the vibration that is picked up by an accelerometer is huge.





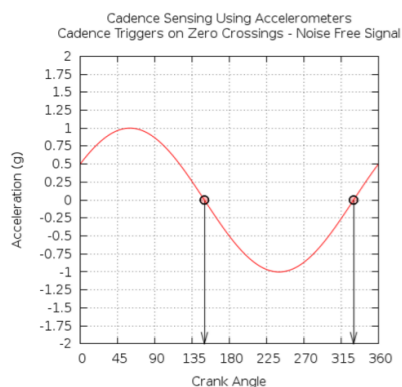
An example of an accelerometer on a Road, Cycleway and Limestone path.



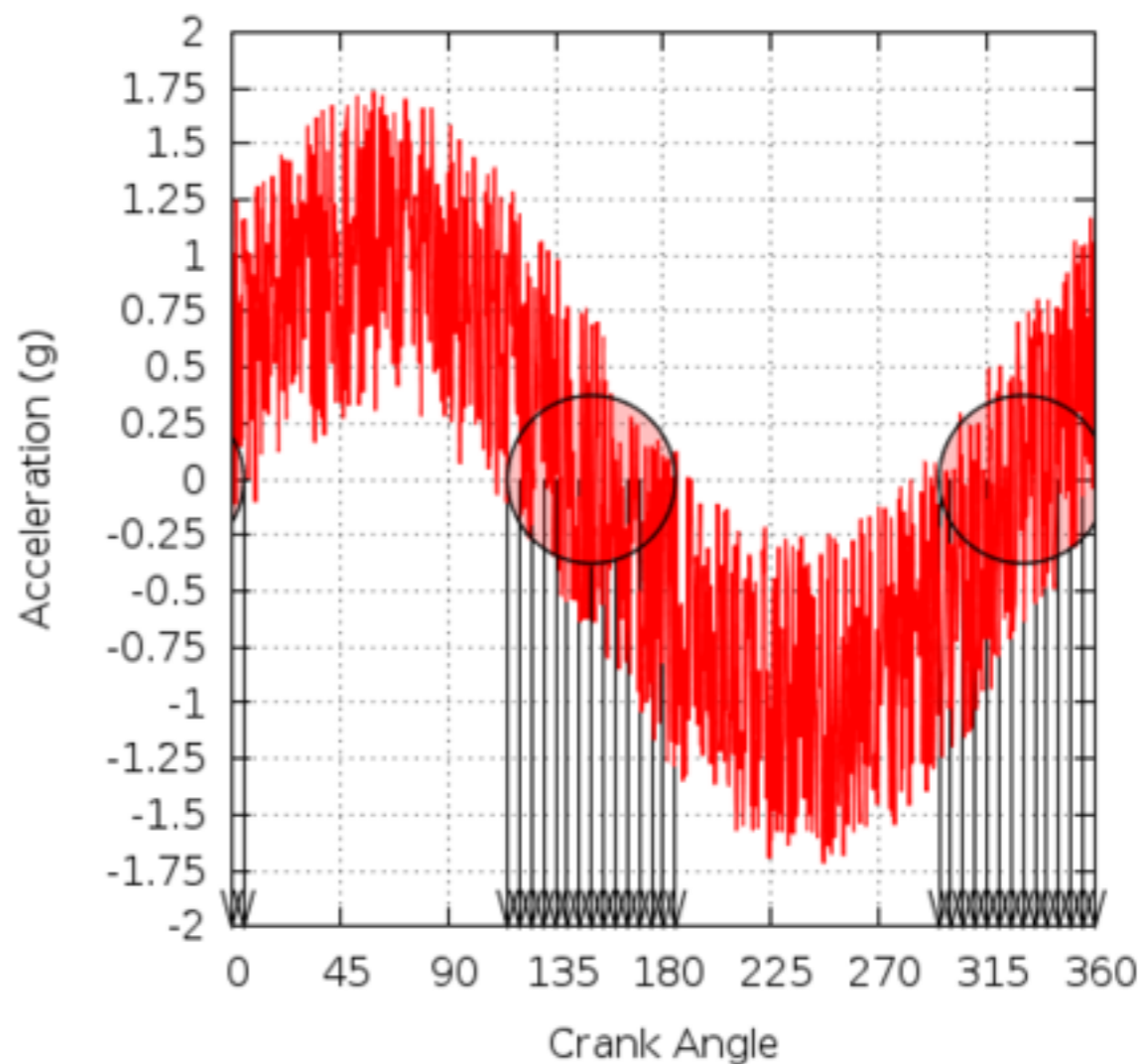
A zoom in on the smooth road surface segment of the ride above.

# The Outcome

It becomes really difficult to actually identify a cadence trigger on a typical road surface.

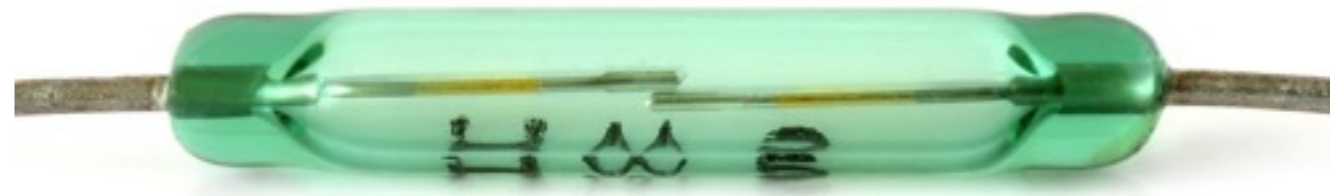


Cadence Sensing Using Accelerometers  
Cadence Triggers on Zero Crossings - Typical Road Surface



# Magnetic Reed Switch

- Can be used to wake the micro-controller from power down sleep mode
- Rotates past a fixed magnet on the frame
- Provides an accurate cadence trigger
- Contact bounce is easily eliminated in software



# Benefits

- Low power consumption
- More accurate
- Faster start up and response times



# InfoCrank's Accuracy

- Accuracy depends on a precise cadence trigger, as this is part of the equation to derive Power
- Magnetic Reed Switches are the most accurate way of measuring cadence, and have other benefits
- So, to achieve the highest levels of Accuracy, InfoCrank uses a Magnetic Reed Switch

