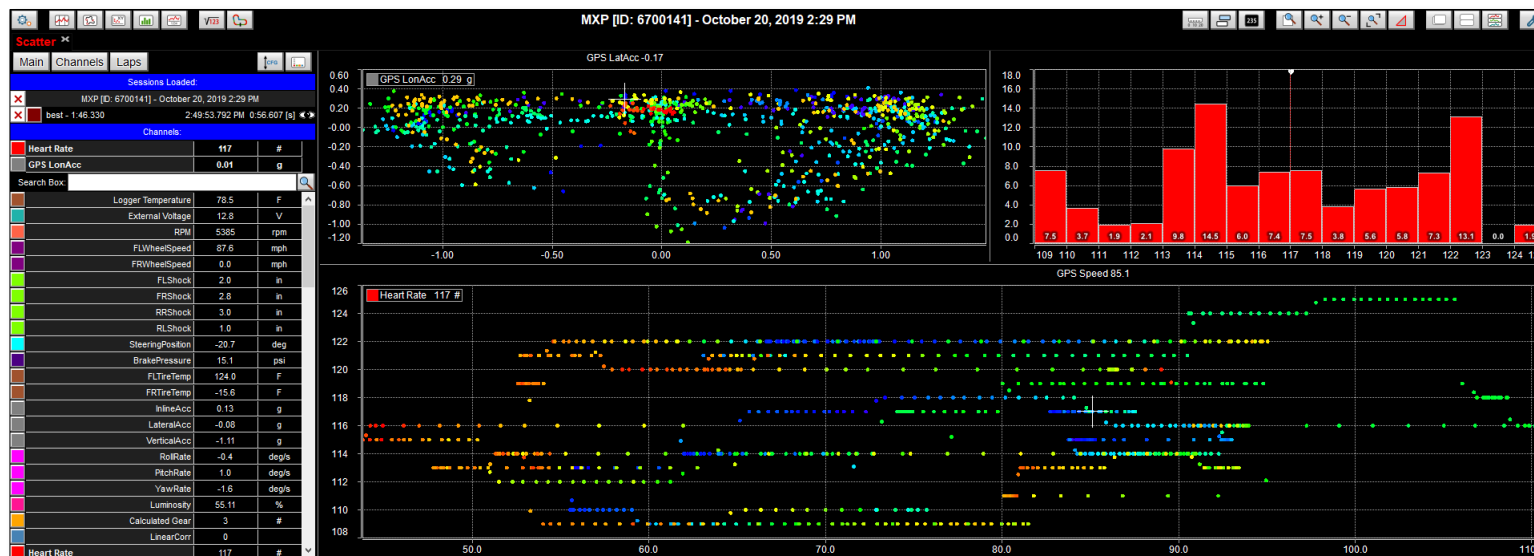


Engineering The Driver

The Science of Motorsport



Host:

Roger Caddell

AiM Sports - National Training Manager

@aimsportsdata

Co-Host:

Matt Romanowski

TrailBrake.com

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Guest:

Dr. David Ferguson

Spartan Motorsport Performance Lab

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Guest:

Dr. David Ferguson

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- The first area of research Dr. Ferguson has interest is how early life nutrition influences cardiovascular development as it relates to functional capacity in adulthood
- The second area of research focuses on the physiological stress placed on automotive race car drivers and pit crews.
- He is working with NASCAR, IndyCar, and Formula 1 teams to increase performance and safety of drivers and crew members.
- 1st Time as an AiM Sports Webinar Guest

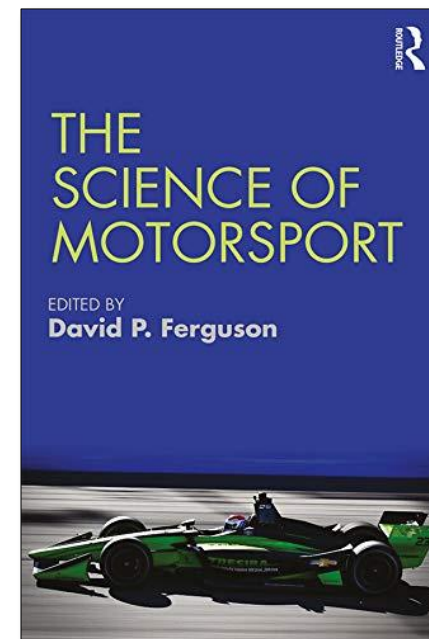
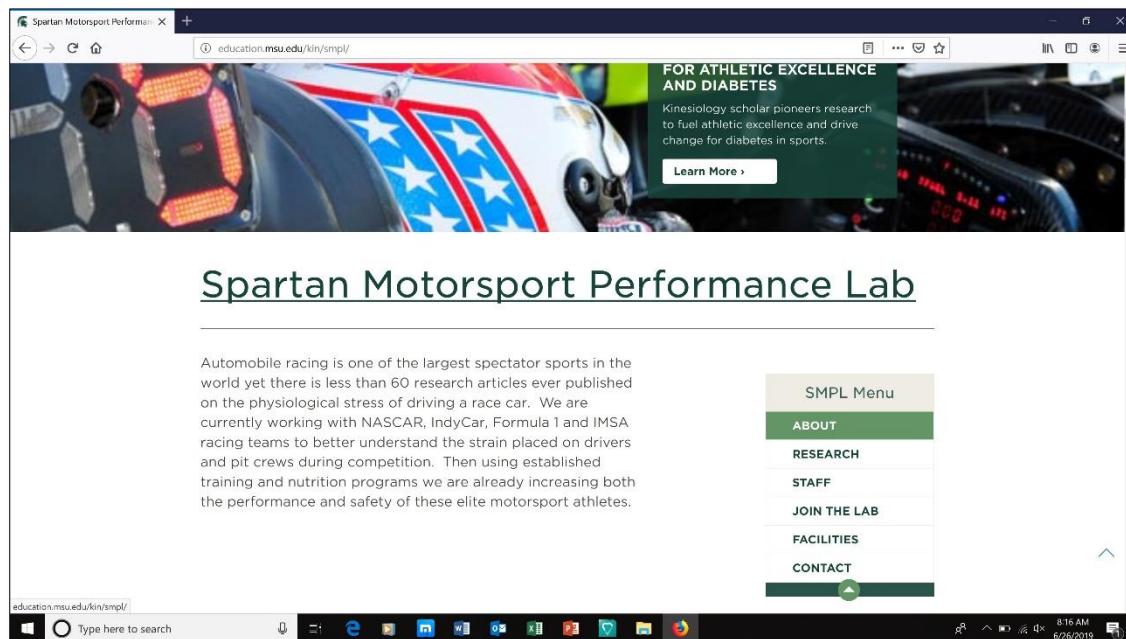
Today's Special Guest

Dr. David Ferguson

Thank You



Driver Physiology



<http://education.msu.edu/kin/smpl/>

Engineering The Driver

Driver Physiology



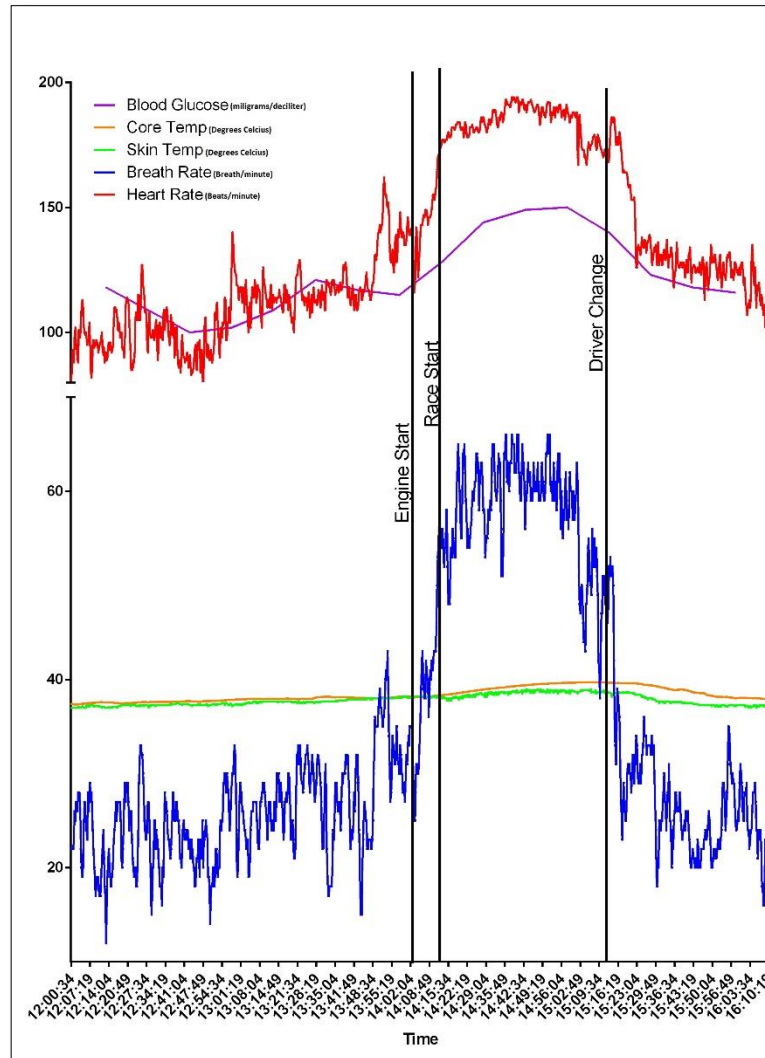
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Racing



Racing is
Physically
Stressful



Engineering The Driver

Racing Is Physically Stressful

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During A Race



- Heart Rate – 65-80% of Max Heart Rate
(Max Heart Rate = 220-your age)
 - Increased Blood Delivery to Working Muscles During a Race
 - Cool the Body
 - Emotional Arousal
- Core Body Temperature – Increases From 37°C (98.6°F) to 39.2°C (102.5°F)
 - Heat Inside the Race Car
 - Insulating Fire Suit
 - 1.8-3.2 kg of Sweat Loss (3.9 – 7.0lbs)

Will This Impair Performance?



- Yes! A Core Temperature Above 38.5°C (101.3°F) Will Slow Reaction Time and Limit Performance
- Drivers Should Drink 1.8-3.2 Liters of Water Over the Course of the Race Day
 - We Can Now Provide More Detail

What If?

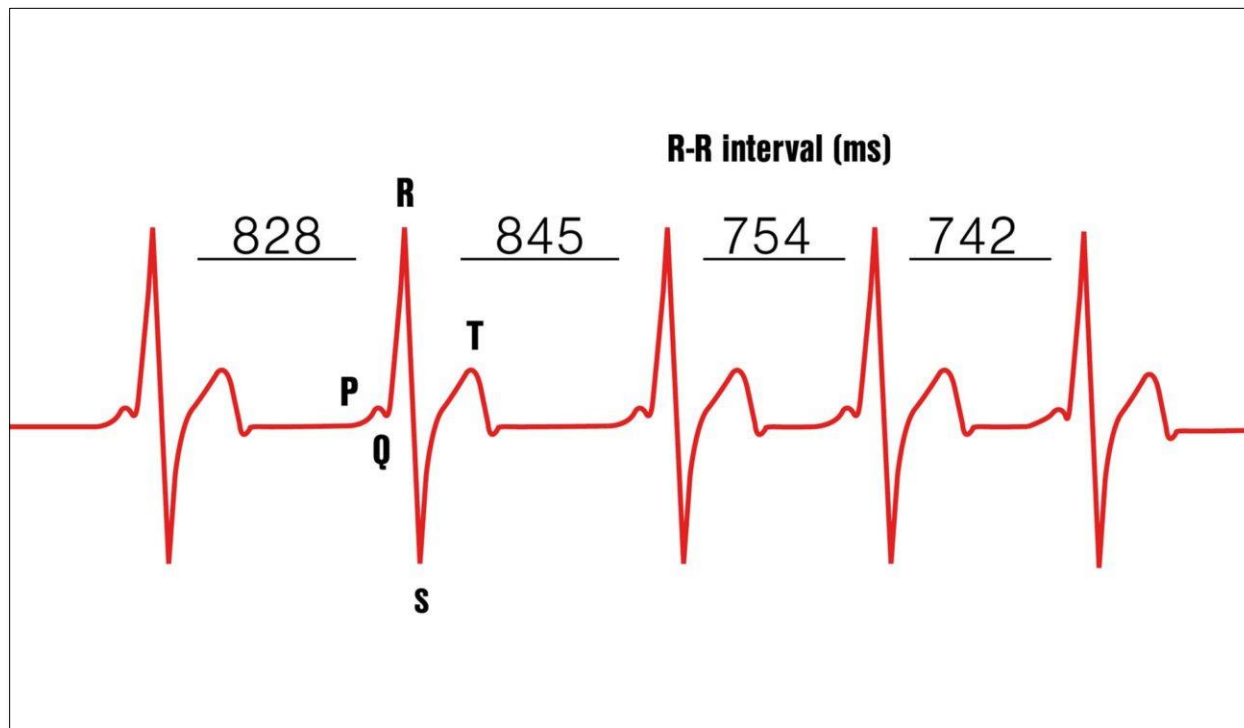


**What If You Could
Use Heart Rate To
Determine Your
Fatigue At Key Points
On The Race Track?**

Heart Rate Variability (HRV)



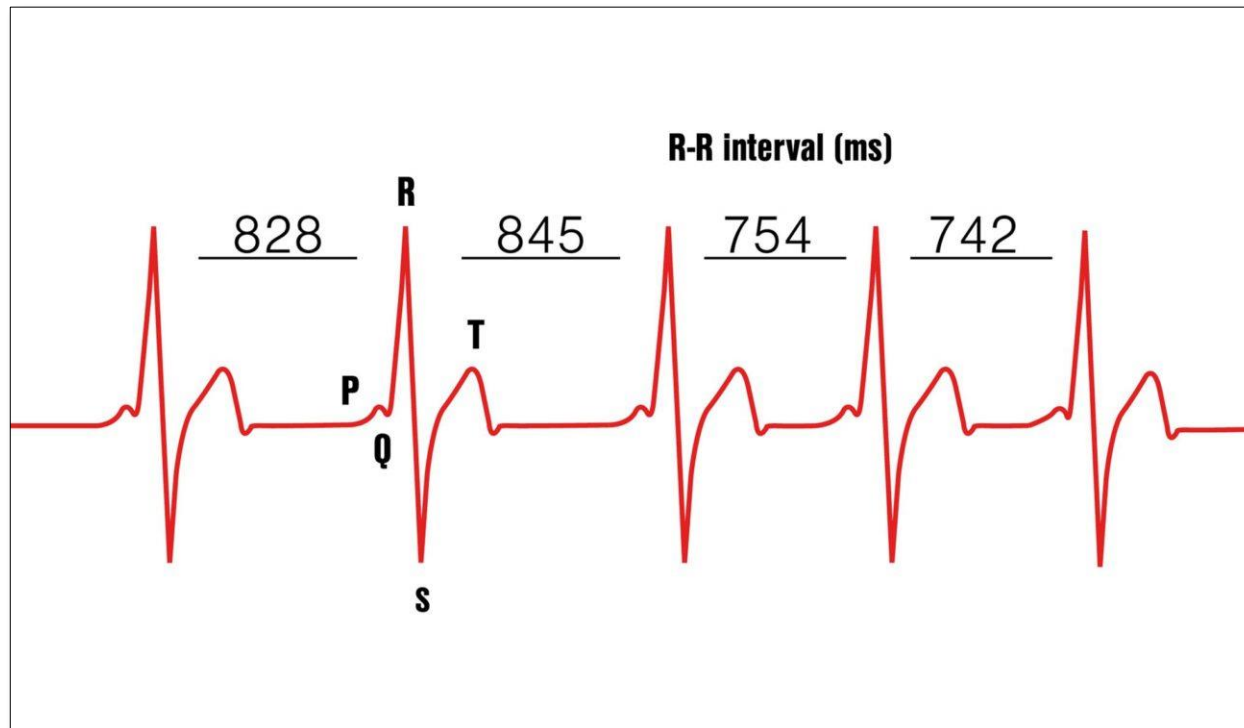
The Variation in Time Interval Between Heart Beats



Heart Rate Variability (HRV)



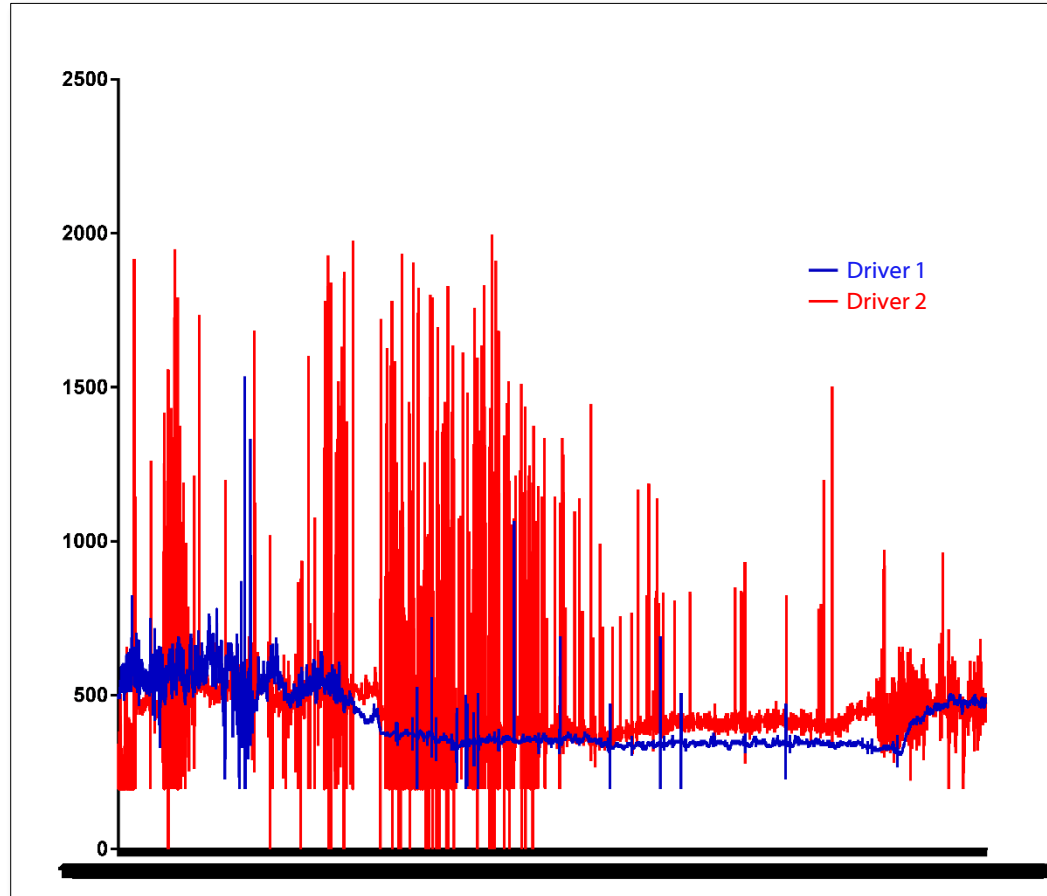
- A Higher HRV Is Associated With Being More Relaxed
- A Lower HRV Is Associated With Being More Stressed



Heart Rate Variability (HRV)



- One Lap At Laguna Seca
- Two Different Drivers
- The Same Car
- **Driver 2** Is Performing Better



Engineering The Driver

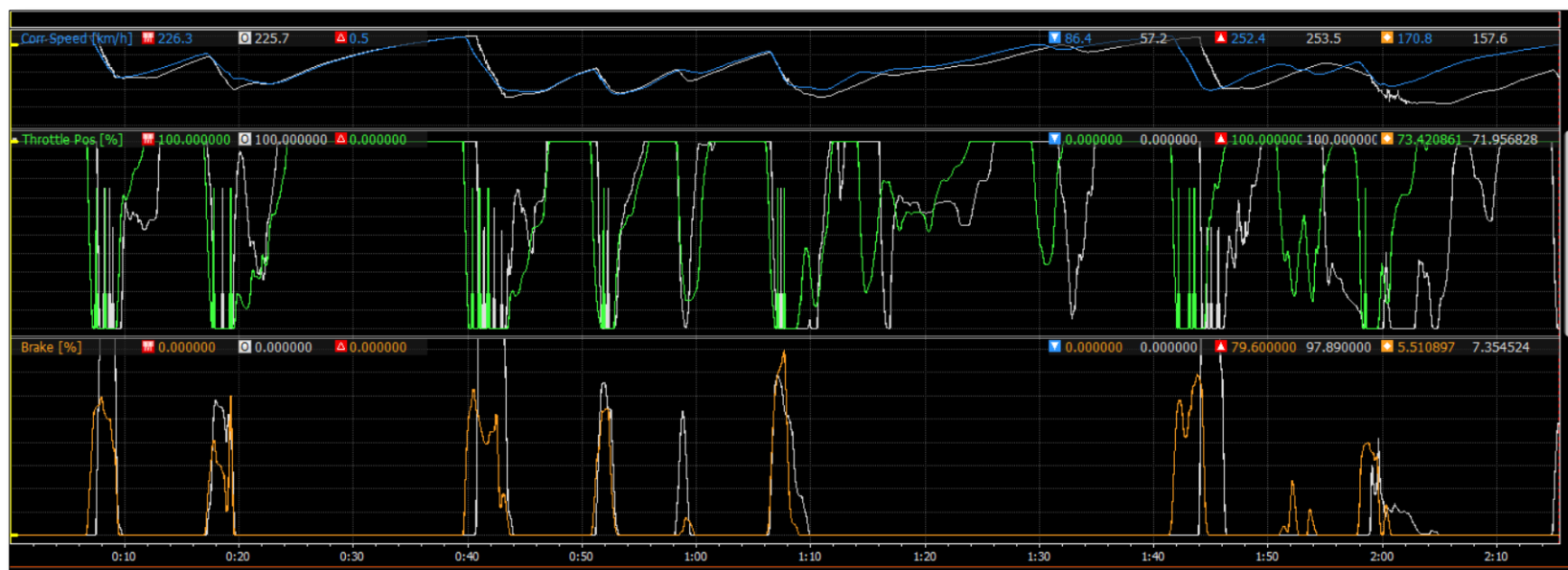
Heart Rate Variability (HRV)

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Fatigue And Driving Performance



Solutions



- If Your HRV Is Dropping At Consistent Points On The Track, Consider Set Up Changes To Make The Car Easier To Drive
- If HRV Is Low Across The Whole Lap, Consider Advice From:
 - A Driving Coach To Improve Performance
 - Fitness Improvement
 - Nutrition Improvement

Purchasing Dr. Ferguson's Book



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The Science of Motorsport Paperback – October 1, 2018

by David P. Ferguson (Editor)

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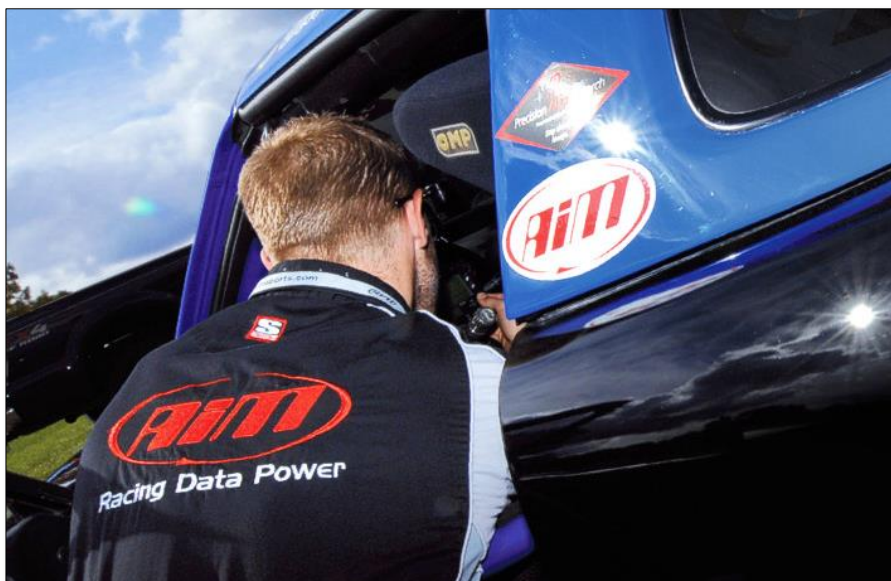
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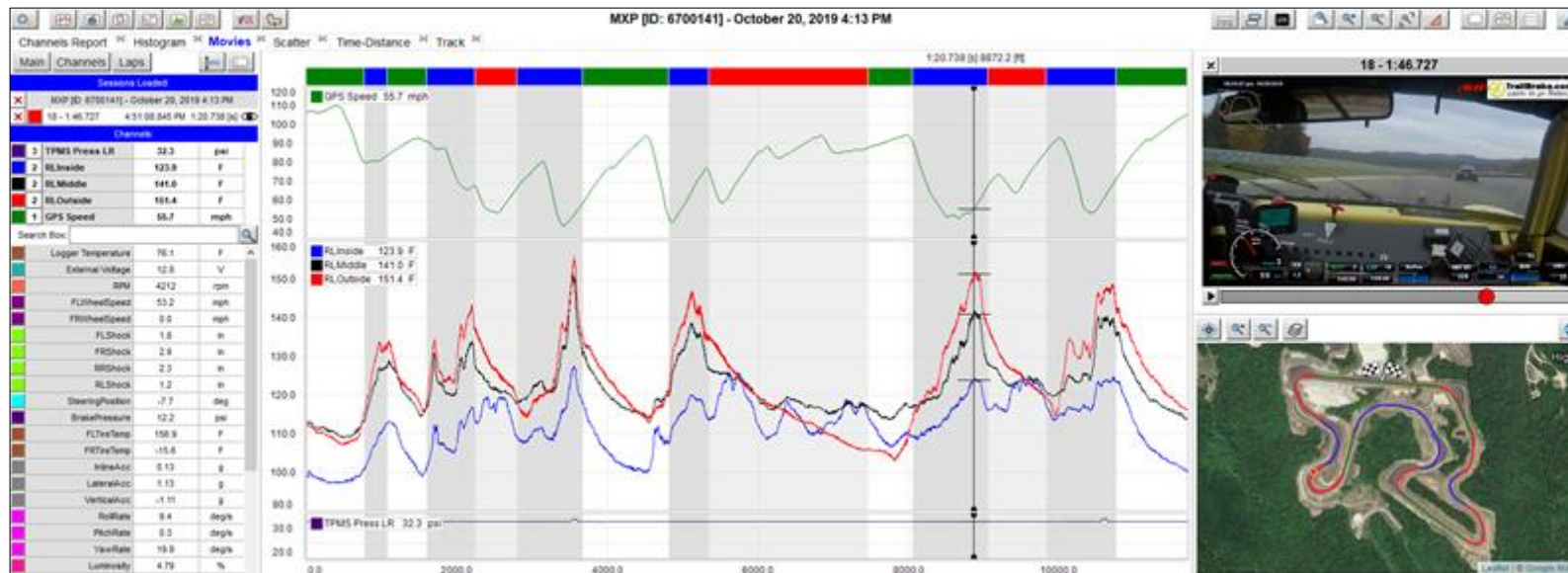


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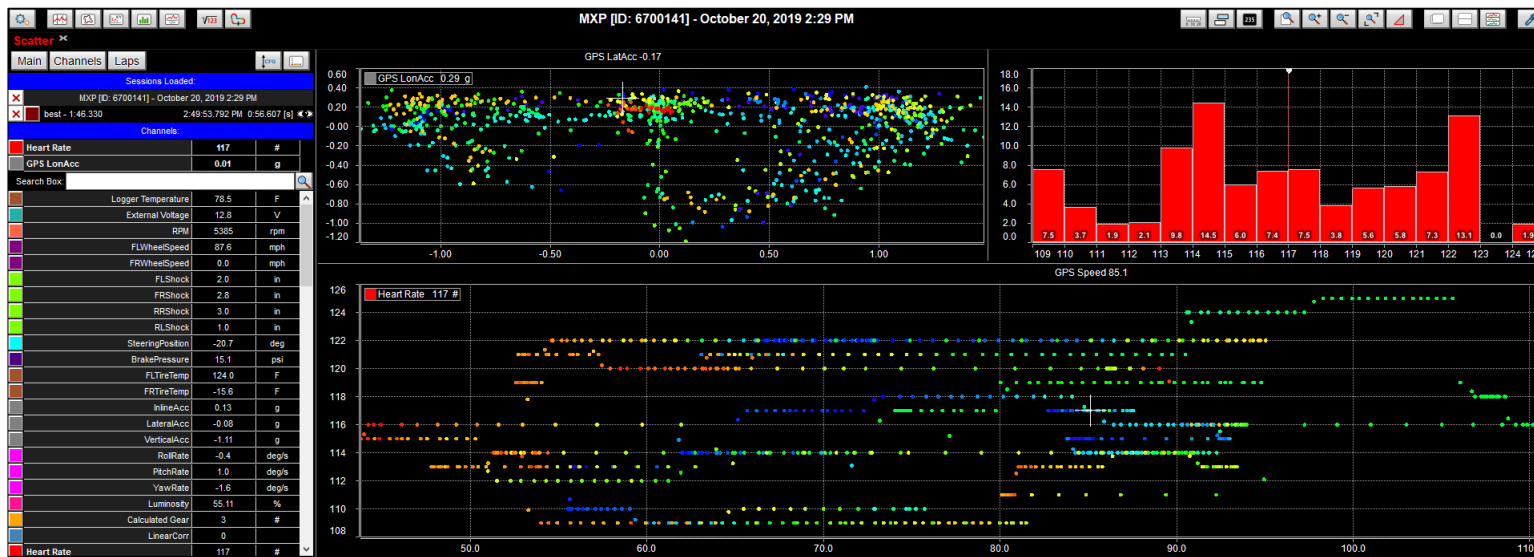
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