

Summary of Understeer/Oversteer Descriptions

1. Slip Angles

Front slip angle greater than rear = understeer

2. Tyre stiffness and CG position

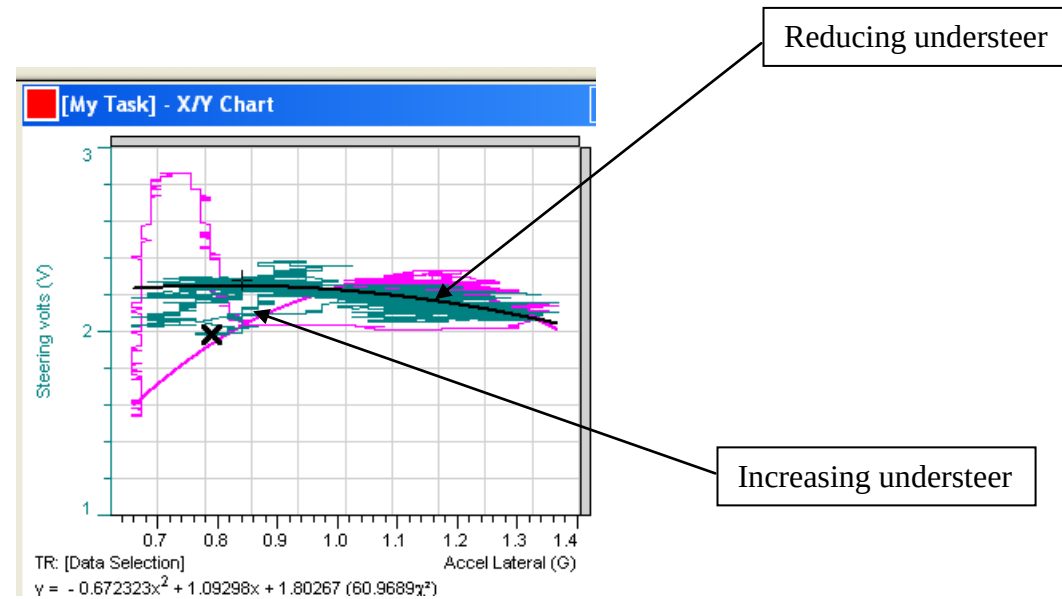
$C_f \times a < C_r \times b$ (Sharp , 2002)

C_f (N/deg) is a force that is acting about the CG This creates a Yaw moment. If front and rear moments are not equal a yaw acceleration is produced dependent on magnitude of the difference in front and rear yaw moments and the rotational inertia of the car.

3. Yaw Acceleration

When a turn is instigated, if the measured yaw acceleration is less than required to make the transition then understeer is indicated. For steady state cornering Yaw acceleration should be zero

4. Understeer gradient

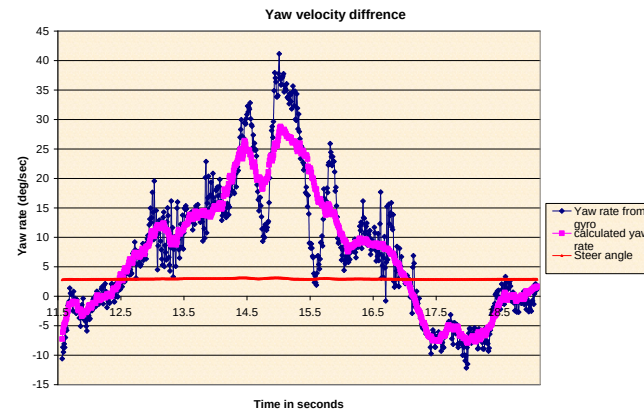


5. Load Splits

Predictive – if split at front is greater than rear than understeer will be indicated
.....if all else is equal!

6. Yaw Velocity

Comparison between measured and calculated yaw velocity – if measured is less than calculated then understeer is occurring.



Robin Perkins, 2010

7. SAE definition

*A vehicle is **understeer** at a given trim if the ratio of the steering wheel angle to the overall steering ratio is greater than the Ackerman steering angle for a given radius of turn.*