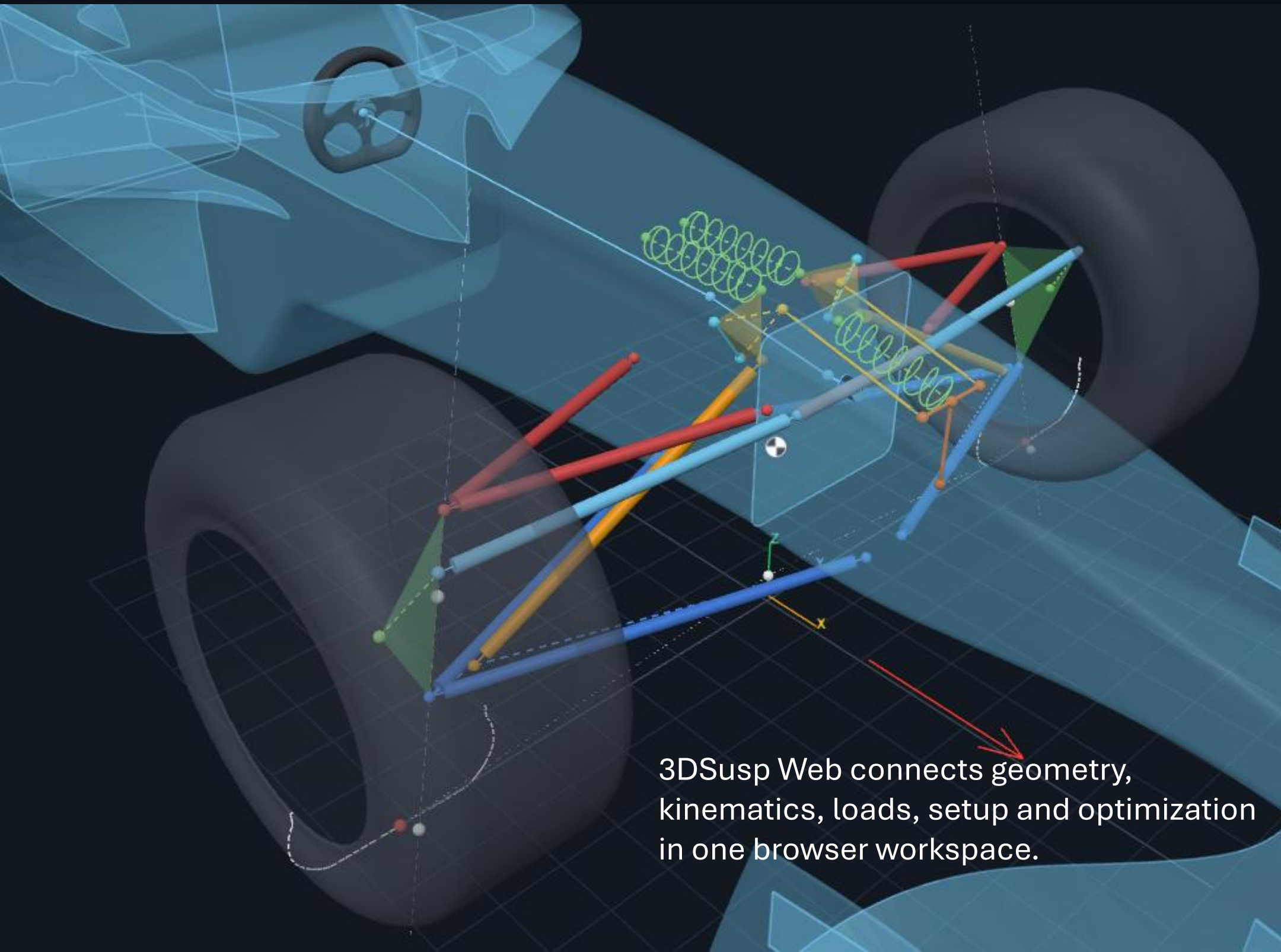




3DSusp[®] Web

Suspension engineering, from hardpoints to the full vehicle.

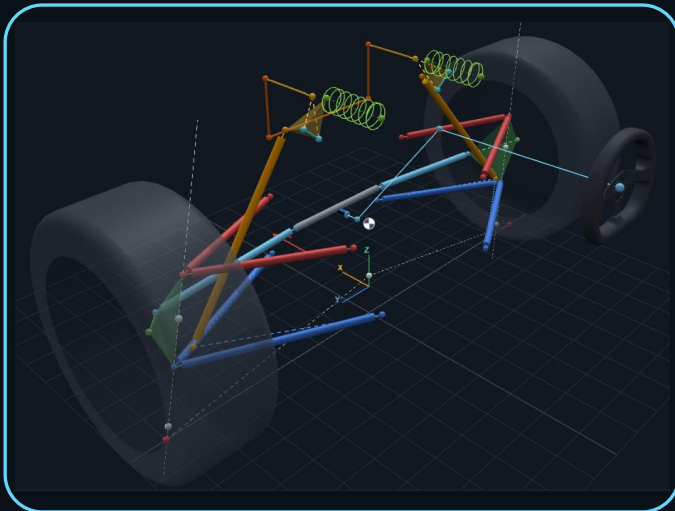


3DSusp Web connects geometry, kinematics, loads, setup and optimization in one browser workspace.

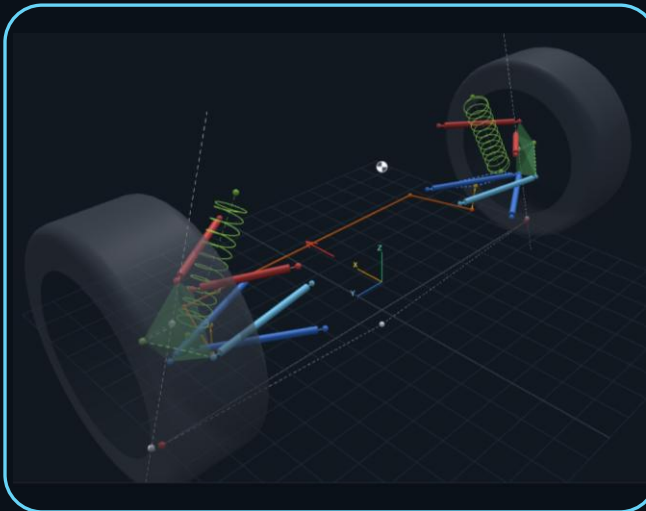
GEOMETRY | KINEMATICS | LOADS | OPTIMIZATION

MODEL DEFINITION

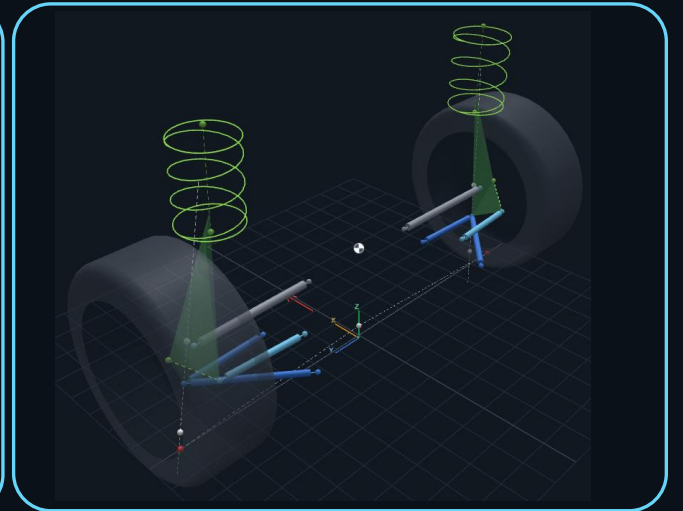
Design the architecture, refine, then add the auxiliary elements.



DOUBLE WISHBONE

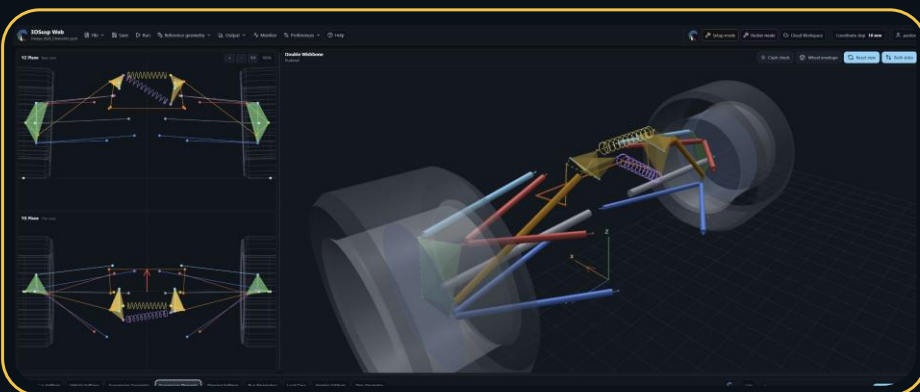


FIVE-LINK

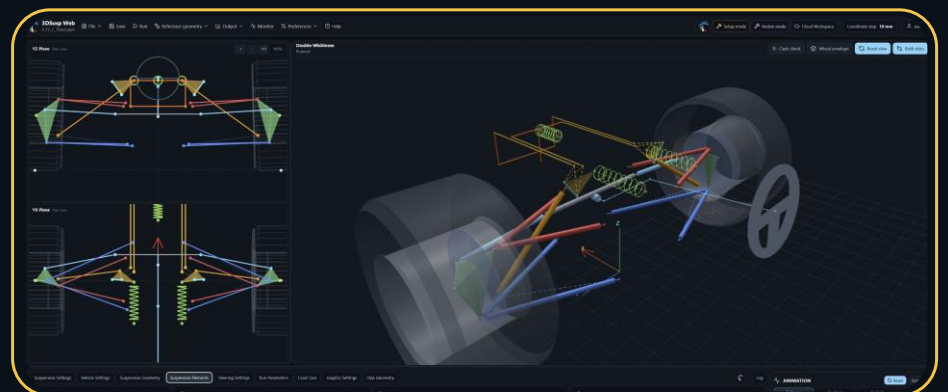


MACPHERSON

HEAVE AND ROLL ELEMENTS



ANTI-ROLL BARS AND THIRD ELEMENT



SUSPENSION ARCHITECTURES

- Double Wishbone
- Five-Link
- Hybrid: Wishbone + Multilink
- MacPherson Strut / split links
- Integral Link
- Semi-trailing arm

ACTUATION AND COUPLED ELEMENTS

- Pushrod / Pullrod / Torsion Bar
- C-shape and T-shape Anti-Roll Bars
- Third Element
- decoupled Heave Spring / Roll Spring
- Steering system
- Driveshafts

Springs, push/pullrods and anti-roll bars connect to upright, wishbone, single link or rocker elements.

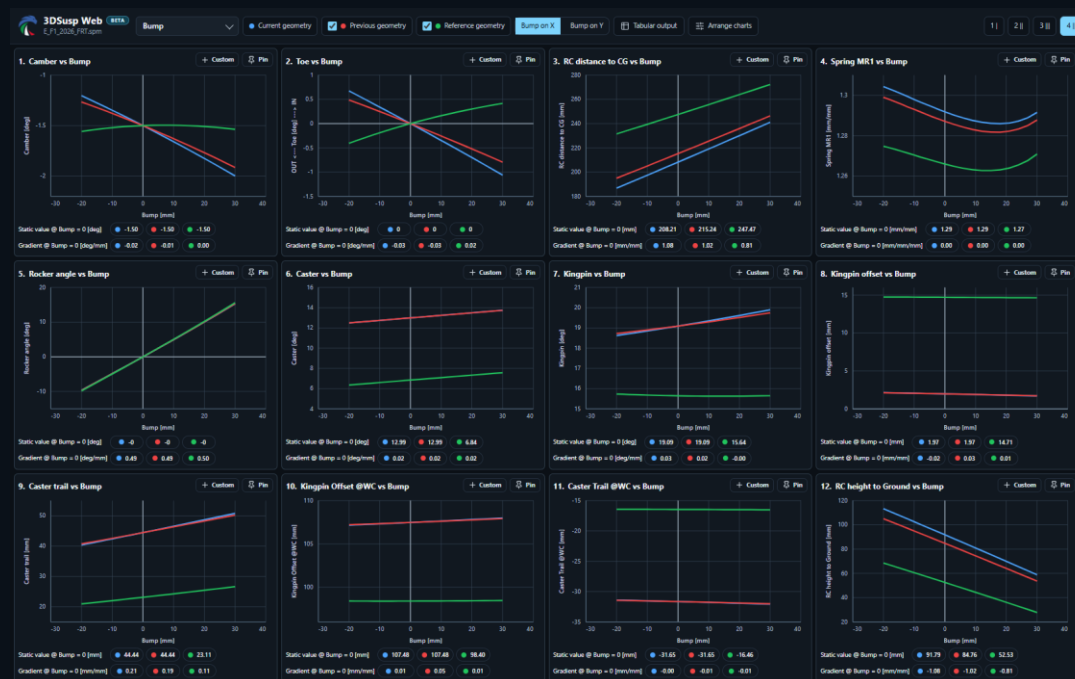
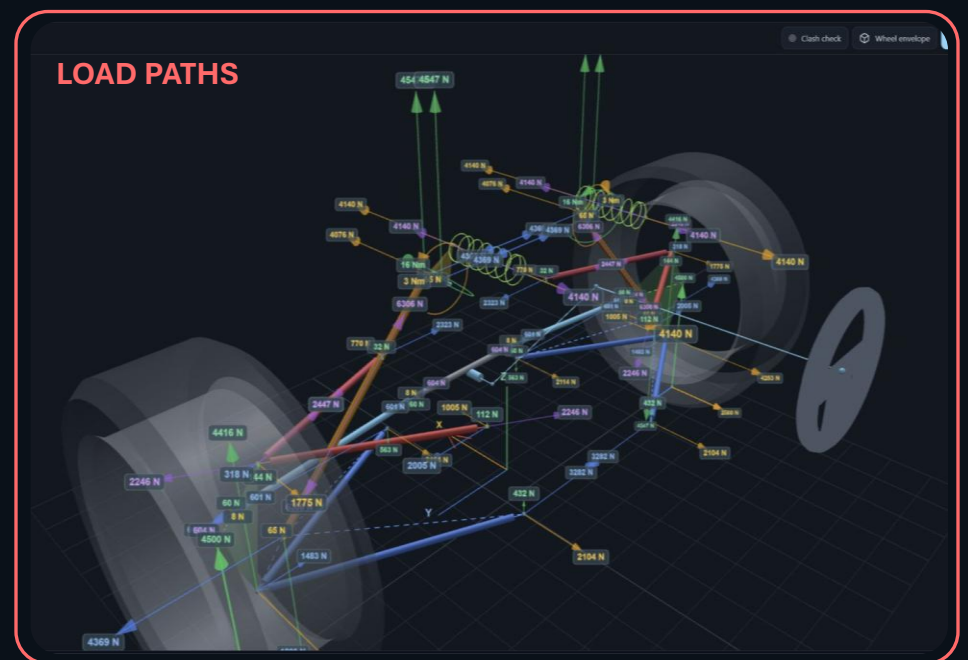
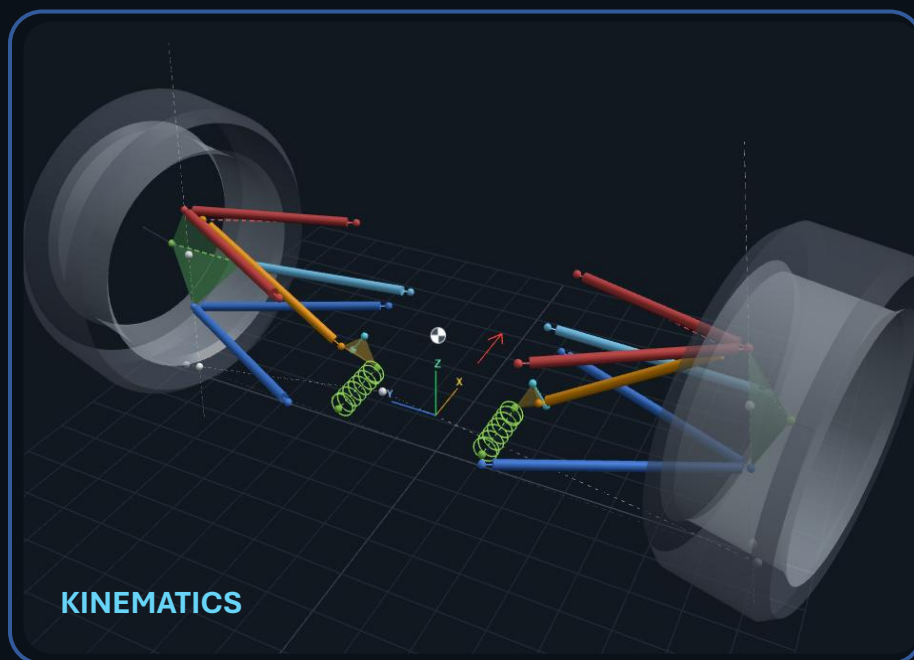
Consistent analysis workflow. Intuitive interaction modes. Custom reports.

All calculations are performed locally, eliminating network latency and providing immediate feedback.

KINEMATICS AND LOADS

One geometry, two connected layers of analysis.

Motion studies and quasi-static force paths use the same hardpoints, wheel definition and operating state.



Tabular output

Load results ordered from highest to lowest bump.

Bump [mm]	FY N	RH TR wheel FZ N	RH Spring chassis FX N	RH Spring chassis FY N	RH Spring chassis FZ N
100	33.619	-18.913	-781.703	1107.190	
93.3	30.596	-19.748	-779.597	1116.553	
86.7	27.681	-20.574	-777.309	1126.073	
80	24.865	-21.392	-774.827	1135.724	
73.3	22.141	-22.203	-772.138	1145.481	
66.7	19.501	-23.005	-769.232	1155.321	
60	16.939	-23.799	-766.099	1165.219	
53.3	14.446	-24.586	-762.727	1175.154	
46.7	12.016	-25.364	-759.107	1185.105	
40	9.642	-26.134	-755.230	1195.050	
33.3	7.317	-26.896	-751.087	1204.967	
26.7	5.033	-27.649	-746.668	1214.836	
20	2.783	-28.394	-741.965	1224.635	
13.3	0.559	-29.129	-736.966	1234.341	
6.7	-1.646	-29.855	-731.664	1243.933	
0	-3.840	-30.570	-726.047	1253.386	
-5.3	-5.592	-31.135	-721.320	1260.832	

Motion inputs/outputs

Heave, steer, roll, bump steer vs camber, toe, caster, kingpin, roll centre, steering ratio, Ackermann, motion ratios, "anti" effects, and many other KPI's.

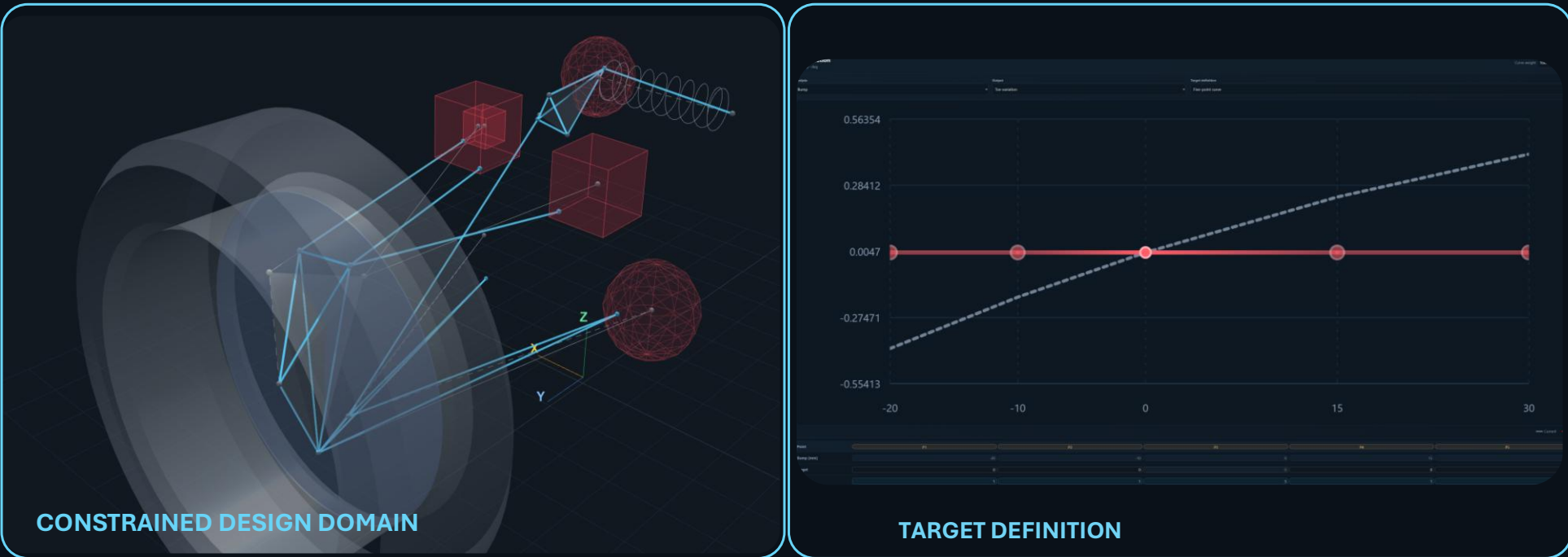
Force inputs/outputs

Contact patch and wheel centre forces and moments vs link loads, reactions @spring and chassis pick-up points, anti-roll actions, rocker torque etc.

BUILT-IN, MULTI-VARIABLE, MULTI-TARGET OPTIMIZATION ENGINE

Optimization mode: target curves become hardpoint coordinates, in seconds. Literally.

A self-developed solver moves selected hardpoints inside constrained 3D domains by targeting user-defined kinematic gradients or curves.



01 VARIABLES → 02 DOMAINS → 03 TARGET CURVES → 04 CONVERGENCE

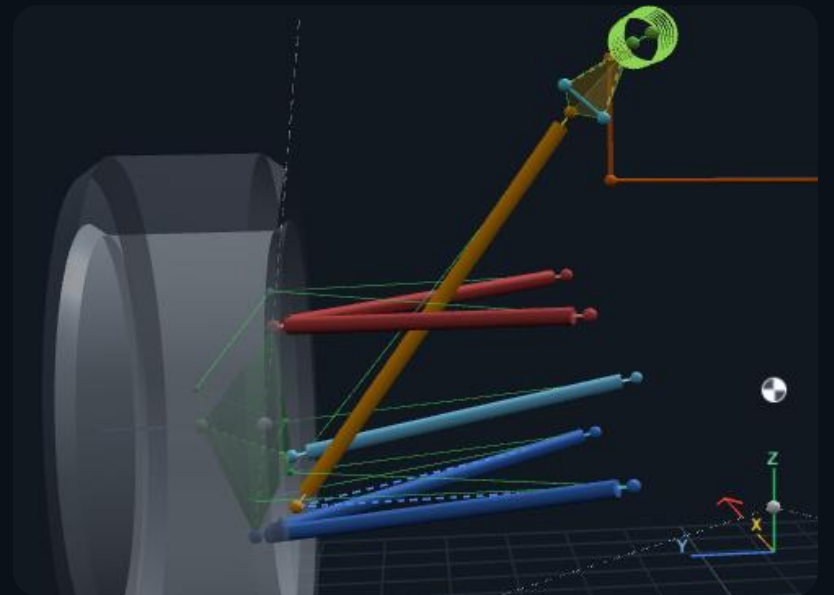
PERFORMING SETUP MODS

Setup Mode: replicate setup adjustments.

Apply controlled static changes, compare the solved state with the baseline, then apply or export.

- Modify ride height through pushrod, spring, or split-rocker independent adjustments
- Wishbone link & track rod length variation
- Switch chassis-side pick-up points
- Add wheel-side camber shims

- Baseline vs modified setup for camber, toe, caster, ride height etc.
- Spring length and motion ratio variations
- Ghost geometry with synchronized 2D/3D views and live monitor

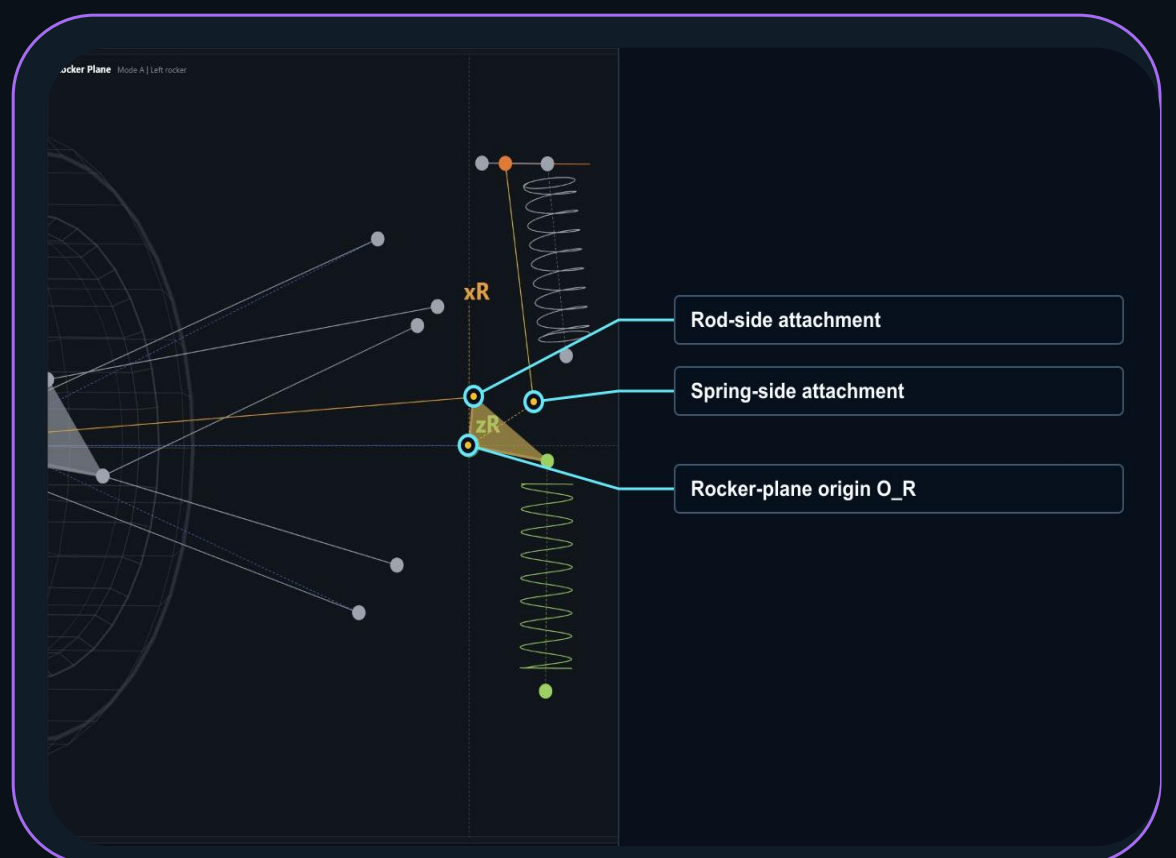


SETUP MODE | RH Adjustment with Pushrod

FINE TUNING THE MOTION RATIO

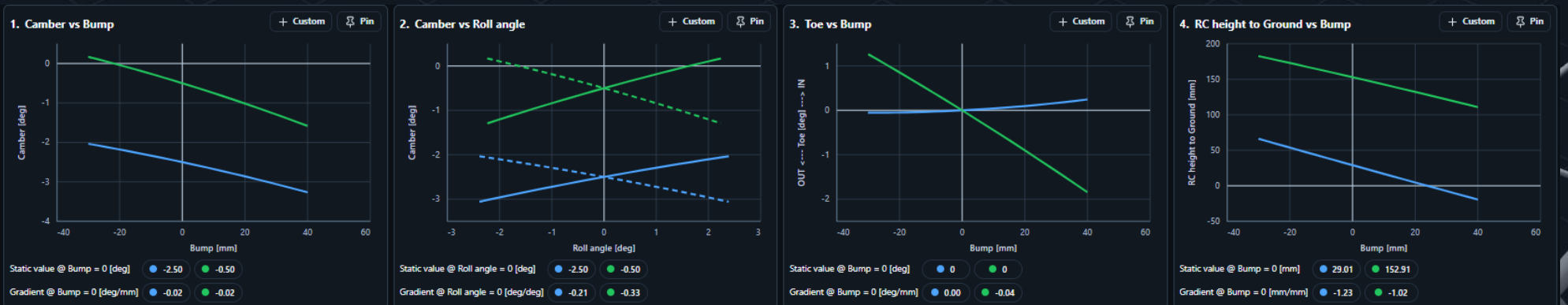
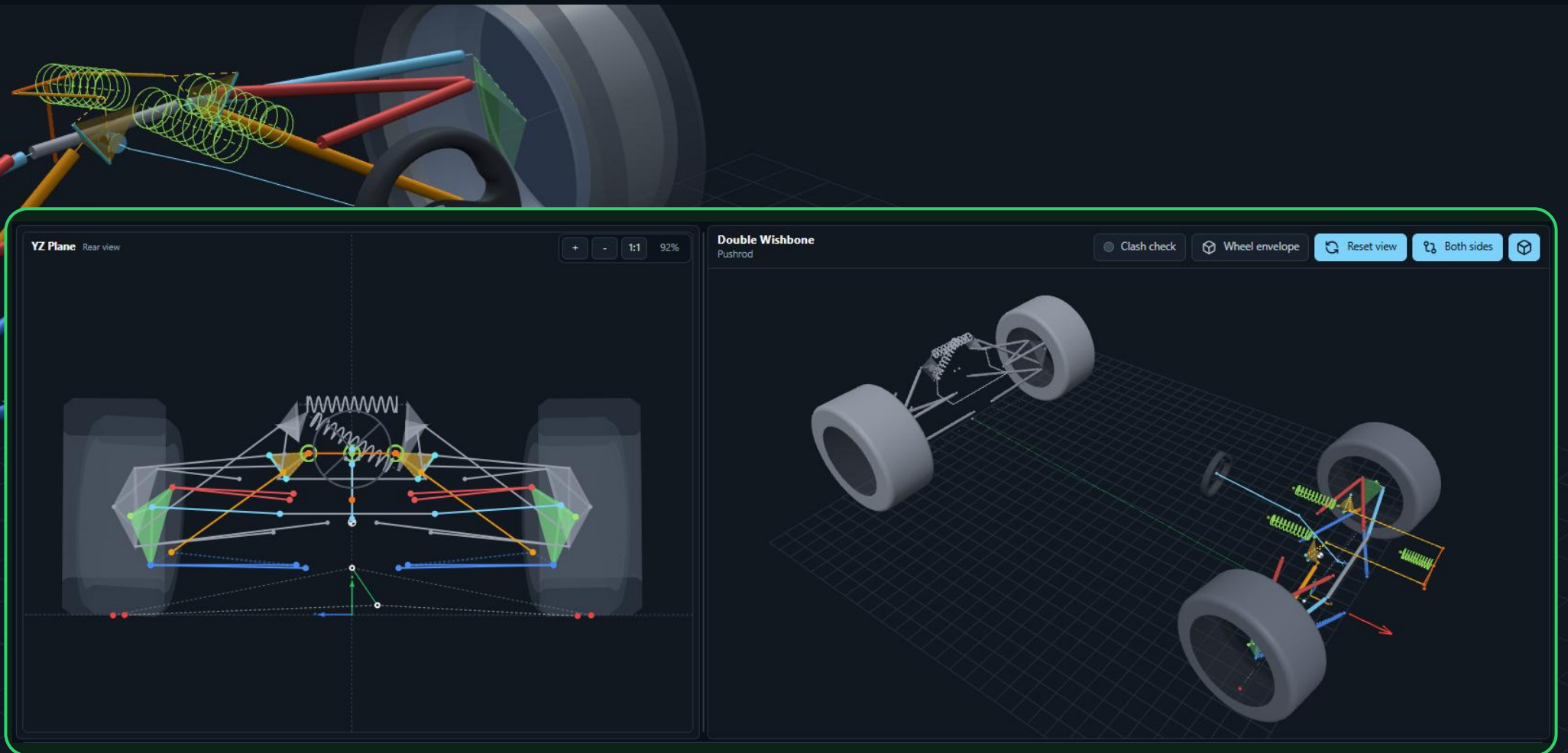
Rocker mode: a different point of view.

Define pushrod, spring, ARB and rocker coordinates in the local rocker plane; inspect motion ratios, lengths, angles, and moment arms then apply modifications



SPEEDING UP THE DESIGN PROCESS

Full vehicle mode: connect front and rear ends in one model.



Axle pairing

Load a second .SPM as the auxiliary axle while the current model remains primary.

Automatic placement

Wheelbase and contact-patch references position the auxiliary model consistently.

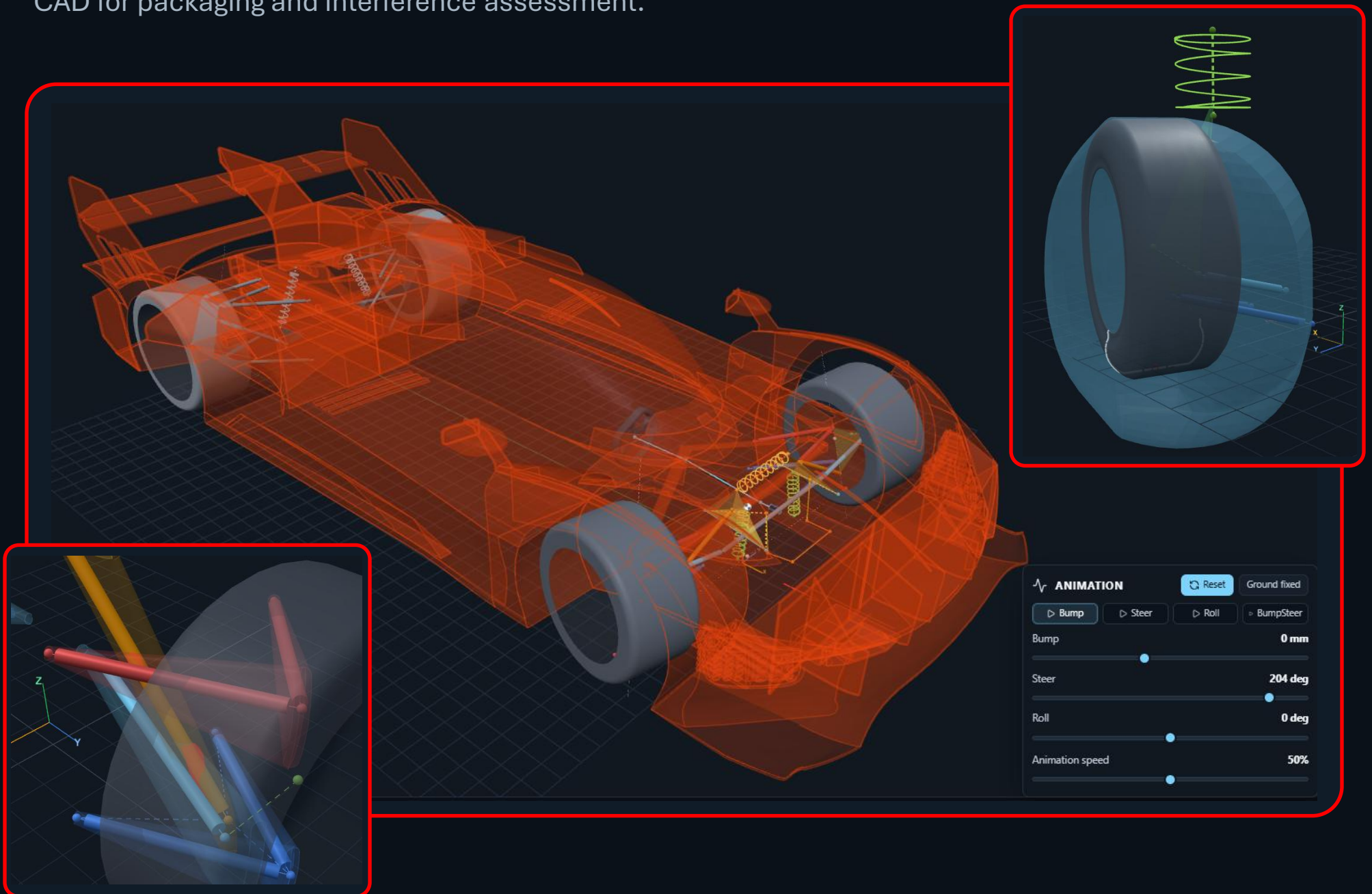
Vehicle-level comparison

Synchronize motion and compare front and rear axle behaviour in heave and roll.

GAINING INSIGHT: THE ENGINEERING WORKSPACE

CAD context is at home within the suspension model.

Import STEP bodywork around the live suspension model. Generate and export the wheel envelope to CAD for packaging and interference assessment.



STEP mesh import

Place bodywork, wings, uprights or packaging volumes in the same 3D context.

Custom tyre profile

Import your 2D tyre profile, generate the wheel envelope in the full heave & steer range, export the envelope surface as a STEP file.

Clash and interference checks

Detect interference between bodywork, suspension links, springs and rocker, and tyre/wheel envelope.



3DSusp[®] Web

GEOMETRY | KINEMATICS | LOADS | OPTIMIZATION

Seven years have passed since we developed the desktop version of 3DSusp. We are now proud to introduce 3DSusp Web, our new, browser-based platform for suspension kinematics design and analysis.

Master any complex layout: design a draft, then optimize in seconds – literally, with the built-in, multi-variable, multi-target optimization engine. Investigate load paths. Customize your reports.

Other special modes: trackside setup, rocker plane, full vehicle. And a lot more to come!

3DSusp Web is now available in beta version*
Access is free, just register here:

<https://www.bspokeautomotive.it/3DSuspWebBeta/>

Find out more about us:

<https://www.bspokeautomotive.it>

* the beta version is just intended for evaluation purposes.

If you would like to report a bug or share a suggestion, please write to
info@bspokeautomotive.it
