MCP SERVER | NO CODE | CLOUD HOSTED

Carve Turn Radius Physics MCP

Get precise physics data for high-performance snowboarding.

Carve Turn Radius Physics MCP uses sidecut geometry and physical variables to model how a snowboard interacts with snow. Your AI client can calculate turning radii, determine the G-forces you'll feel in a turn, and check if your edge hold is strong enough to prevent slipping based on snow hardness and board flex.

snowboarding | physics | carving | mechanics | sports-science

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vinkius.com/en/ai-agent-connect/carve-turn-radius-physics

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Carve Turn Radius Physics MCP

4 tools available
Cloud-hosted on Vinkius

You can use this MCP to turn your AI client into a specialized sports science tool. Instead of guessing how a board will react, you provide variables like edge angle, snow hardness, and board flex to get hard numbers. It calculates the actual radius of a turn based on how the sidecut engages with the snow. You can also determine the physical load on a rider by quantifying G-forces or calculating the exact force an edge needs to exert to stay locked in. This is useful for testing how different gear setups or riding styles will perform under specific conditions without needing to be on the mountain.

Core Capabilities

01 — Turn Radius Modeling

Your agent calculates the actual path of a turn using sidecut geometry.

02 — Load Quantification

Your AI client determines the G-forces applied to a rider during maneuvers.

03 — Slip Prevention

Your agent calculates the necessary edge hold force to maintain grip.

04 — Stability Analysis

Your AI client evaluates if turn parameters will result in a slip.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/en/ai-agent-connect/carve-turn-radius-physics** — connect your AI agent in three steps.

01 Connect your AI client to Vinkius.

02 Select the Carve Turn Radius MCP from the catalog.

03 Input your variables like edge angle, speed, or snow hardness into your AI client.

04 Your agent uses the physics tools to run the math.

05 Receive specific numerical results for radius, force, or G-force.

You connect the MCP to your AI client and start asking for physics calculations.

Built For

This MCP is built for people who need to model the physics of snowboarding performance.

Gear Designers

They use the tool to model how sidecut geometry affects turn radius.

Sports Scientists

They use the data to quantify physical loads and G-forces on athletes.

Advanced Riders

They use the calculations to understand the mechanics of their carving style.

What Changes When You Connect

01 Calculates turn radius using sidecut geometry.

02 Quantifies G-forces experienced during turns.

03 Determines required edge hold force to prevent slipping.

04 Evaluates carve stability based on snow hardness and board flex.

Real-World Applications

Equipment Testing

Model how different board flexes and sidecuts change the turning radius.

Athlete Training

Calculate the physical intensity and G-forces an athlete will face in specific turns.

Snow Condition Analysis

Determine how snow hardness affects the force needed to maintain an edge hold.

Performance Modeling

Check if a specific turn setup is stable or likely to result in a slip.

4 Tools Available

#	TOOL	DESCRIPTION
01	analyze_carve_stability	This tool checks if your current turn parameters are sustainable or if you're about to slip.
02	calculate_carve_radius	This tool finds the actual radius of a turn by looking at sidecut geometry and engagement.
03	calculate_edge_hold	This tool determines the total force an edge must exert to keep the board from sliding out.
04	calculate_turn_intensity	This tool measures the physical G-force load a rider experiences during a turn.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U What is my turning radius if my edge angle is 45 degrees and my sidecut radius is 15 meters?

Your calculated turning radius is 10.61 meters.

U How much G-force will I feel if I turn at a radius of 12 meters at a speed of 10 m/s?

You will experience approximately 0.85 Gs during this turn.

U Calculate the edge hold force for a 70kg rider at a 10m radius and 12 m/s speed on groomed snow (1.0 hardness).

The required edge hold force is 1018.56 Newtons.

Frequently Asked Questions

01 **What can this MCP calculate?**

It calculates turning radius, G-forces, edge hold force, and carve stability.

02 **Which AI clients can use this MCP?**

You can use it with any MCP-compatible client like Claude, Cursor, or Windsurf.

03 **Does it account for snow conditions?**

Yes, it uses snow hardness as a variable to determine edge hold and stability.

04 **How does it determine the turning radius?**

It uses sidecut geometry and the angle of the edge to find the actual radius.

05 **Do I need to host the MCP myself?**

No, Vinkius hosts and manages the MCP for you. You just connect and use it.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"carve-turn-radius-physics": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Carve Turn Radius Physics is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

INDEPENDENT PLATFORM DISCLAIMER

DOCUMENT INFORMATION

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MCP Server	Carve Turn Radius Physics MCP
Server ID	`01a0a250-b073-710f-9ec9-b3a4643b7fd4`
Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

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