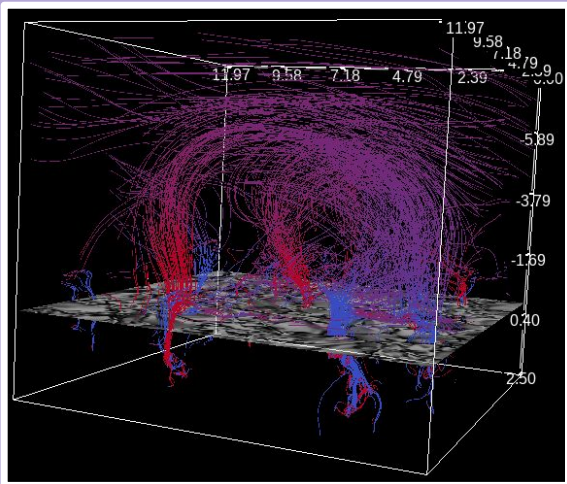


# We're getting closer to understanding Solar magnetic fields



From simulations like this, we've learned that the **Quiet Sun (QS)** is a considerable contributor to **atmospheric heating**...but how, and **which magnetic field topologies** lead to heating events?

Learn more about Whole Sun here!



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## Simulating Atmospheric Heating with *Bifrost*

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### The Problem

The Coronal Heating Problem is still unsolved

but

Several different studies nod toward a general solution

QS fields are relevant contenders

but

Field topologies are hard to nail down

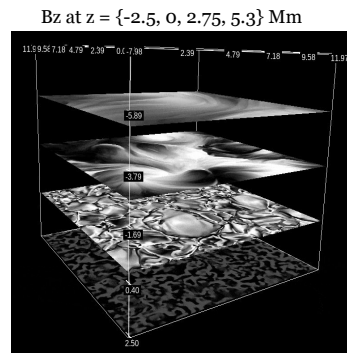
We use *Bifrost* to suggest a QS topology that may lead to atmospheric heating

and

We present this topology as a laboratory for understanding QS heating mechanisms

### How It's Done

We set up a QS *Bifrost* simulation with a **balanced vertical field** and let it evolve for **~3 hrs** solar time -- then, we noticed some interesting **magnetic features**



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Physics

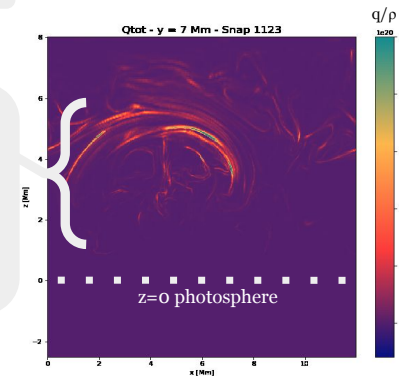


WHOLE

UiO : Institutt for teoretisk astrofysikk  
Det matematisk-naturvitenskapelige fakultet

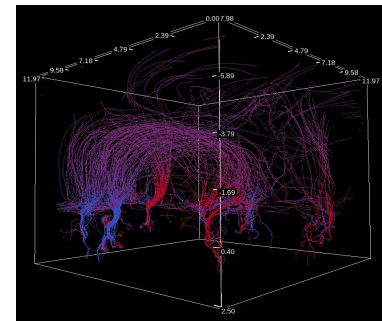
### What we Found

A plasma bubble with **bipolar photospheric feet** forms, collapses, and causes an **atmospheric heating event**



### The corks Module

By re-running the simulation with **test particles**, we can follow the **evolution** of the magnetic feature until it collapses



### What's Next?

We've identified this **magnetic feature** and see that it is associated with **atmospheric heating**, but...

Why does the plasma bubble form/collapse?

What are the stats on this magnetic feature?

How does this heating impact the atmosphere?