How can we catch problems that can break the PREEMPT_RT preemption model?

The fully preemptive preemption model, along with real-time mutexes, are the main features of the PREEMPT RT.

How do we check if we are respecting all the rules for these features, e.g., how do we check if changes in the kernel are not breaking the preemption or the locking model?

For locking, we already have an answer: Lockdep!

But how about the preemption model?

The presenter has a preliminary formalization of the preemption model, and he wants to discuss how to implement the validator of the model. Should it be in kernel or user-space? Tracing or a "validator" like lockdep?

I agree to abide by the anti-harassment policy

Yes