

## Quantum optics with radiation on the move

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This colloquium will be held in **HYBRID format**.

**On-site Venue:** [Wako C61](#) Wako Welfare and Conf. 2F Large Meeting Room

**Online Venue:** Zoom. To receive the link, register in advance at

[https://krs2.riken.jp/m/rqc\\_registration\\_form](https://krs2.riken.jp/m/rqc_registration_form)

With the scaling of quantum technologies to many separate material quantum components, we may have to couple these systems by propagating quantum radiation, in the form of light, microwaves or phonons.

In future optical quantum processors, we may, conversely, need to manipulate the quantum states of radiation pulses by their interaction with non-linear stationary quantum components. Several physical processes have been proposed and already demonstrated for these tasks. There are, however, rather fundamental obstacles to the treatment of propagation of radiation in circuits for quantum computing. These obstacles include the general multimode character of propagating fields and the duration and spatial extent of useful light and microwave pulses. The talk will review recent developments of a cascaded master equation approach to deal theoretically with these obstacles, and it will present examples of new, unforeseen, possibilities for easy preparation and manipulation “on the fly” of quantum states of light and matter.