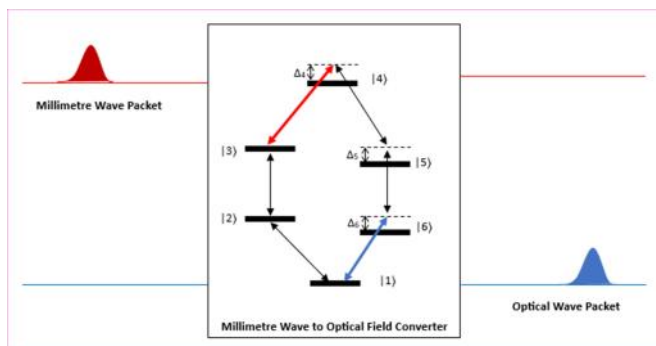


Coherent conversion between microwave/THz and optical photons

A device allowing coherent conversion of microwave/THz radiation into optical radiation and vice versa.

Applications: Quantum computing, photonic communications, signal processing, sensing and measurements, terahertz imaging



Features	Benefits
The technology utilises highly excited Rydberg states in the alkali atoms to convert millimetre waves into optical radiation and vice versa	Much higher conversion efficiencies than other optical to microwave radiation converters
Phase coherent interconversion between microwave and optical radiation. Maximally achievable conversion efficiency of almost 100%	Provides a route to freely scalable all-photonic quantum computers
Interconversion of any temporal/spectral shape of signal, up to a bandwidth of 100 MHz	Allows conversion of arbitrarily multiplexed signals, with the same conversion efficiency for each letter in the encoding alphabet

Features	Benefits
Spatial and spectral multimode conversion	Can be used to convert arbitrary time-series and enables microwave and terahertz imaging
Can select the microwave carrier frequency from the available transitions in the Rydberg manifold	Gives a choice of bands from 1 GHz up to several THz

Patented and Available for

- Co-development
- Consulting
- Licensing

To find out more, contact enquiries@innovation.ox.ac.uk and quote the project number.

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