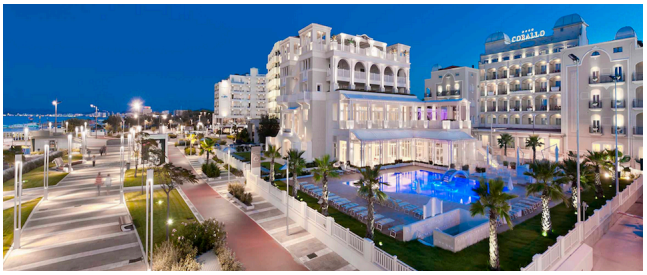

Contribution ID: **73** Type: **invited**

Symmetric Compton Scattering - a possible way to compact monochromatic gamma-ray sources

Monday, 5 June 2023 16:00 (30 minutes)

We report our recent study on the transition between Compton Scattering and Inverse Compton Scattering (ICS), which is characterized by an equal exchange of energy and momentum between the colliding particles (electrons and photons). This regime has been called Symmetric Compton Scattering (SCS) and has the unique property of cancelling the energy-angle correlation of scattered photons, and, when the electron recoil is large, transferring mono-chromaticity from one colliding beam to the
other, resulting in back-scattered photon beams that are intrinsically monochromatic. The study suggests that large-recoil SCS or quasi-SCS can be used to design compact intrinsic monochromatic gamma-ray sources based on compact Linacs, thus avoiding the use of GeV-class electron beams together with powerful laser/optical systems as those typically required for ICS sources.

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Session Classification: S4: New Concepts