



The Abdus Salam
International Centre for Theoretical Physics



**Advanced Workshop on
"Anderson Localization, Nonlinearity and
Turbulence: A Cross-Fertilization"**

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TITLE:

"Co-localization of Indistinguishable Photons in Disordered Waveguide Arrays"

ABSTRACT:

We study the evolution of two indistinguishable quantum particles co-propagating in periodic and disordered media. While the particle density follows the single-particle dynamics, the two-particle correlation function develops several unique features. In disordered media, the localization of one of the particles uniquely determines whether the other particle will localize or not. On long time scales, the localized particles show nontrivial correlations over distances smaller than the localization length. We discuss experiments verifying some of these predictions.