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Smart, portable, miniature, static, broadband, optical interferometers and measurements

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Optical interferometry is a well-known, highly regarded and powerful measurement technique that is used in many forms to perform a very wide range of measurements. Applications of interferometry range from source characterisation to material characterisation; from OCT to photonic sensing; and from space weather monitoring to gravitational wave detection efforts. In this work, we report this powerful measurement tool in its form as a PIE instrument that is based on the Young's interferometer configuration. We report several metrology and FT-spectroscopy measurements using this miniature, portable, static, broadband interferometer configuration that includes both optical fibre circuits and optical waveguide circuits. Using these simple and powerful interferometer configurations, we report sub-nanometer spectral resolutions, picometer detection of wavelength changes, high resolution measurements of group velocity dispersion and attosecond measurements of delay change.

Biography

Dominic F Murphy has a PhD in Optical Interferometry and more than 17 years of research, development and innovation experience across a range of industrial and academic roles, and several of the myriad facets of optics and photonics. He is the CEO and Co-founder of Pie Photonics Ltd., a new company that is mobilizing static interferometry to deliver the power of interferometry to enable more measurements, in more locations, more often. He has co-authored more than 60 publications including journal and conference papers, invited presentations and patent applications.

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