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
Cross-Correlation Noise Studies in Atomic Magnet-Optic Rotation Spectroscopy

of

Chemistry

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 [Keywords](#)  
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**Abstract:** Analytical signals in an Atomic Magneto-Optic Rotation spectrometer are buried in noise at the limit of detection. The noisy analytical signals were analysed by carrying out mathematical correlation of their time domain waveforms. The noise components of signals were removed by auto-correlation to simplify the study. If noise interferes in analytical signals whose source is unclear, a cross-correlation of the output waveform with noise source may identify the source, e.g., mains frequencies and background radio signals. A cross-correlation will reveal whether the two signals are derived from the same source. This can also lead to an improvement in the signal detection limit. Either of the two above situations can occur in studying analytical signals. In this study, both auto-and cross-correlation studies were carried out on analytical signals which had discrete noise sources present in their waveforms.

**Key Words:** Atomic magneto-optic rotation spectrometer, auto-and cross-correlation

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