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Hot Dust in the Narrow Line Seyfert 1 Galaxy ESO323-G77

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We are currently undertaking an optical and near-infrared (IR) monitoring campaign of a sample of nearby AGN. One of the aims of the study is to understand whether the dusty environment surrounding the black hole depends on the physical properties of the AGN, such as luminosity or accretion rate. The dust in this region is commonly referred to as the ‘torus’ and serves as a reservoir for accretion and provides the angle-dependent obscuration required in the unification scheme. ESO323-G77 is the only narrow-line Seyfert 1 galaxy in the sample and serves as a proxy for highly accreting objects. The time lag between the optical and near-IR emission is a measure of the physical size of the innermost hot dust around the AGN. For ESO323-G77, we measure 73_{-5}^{+3} days or ~ 0.061 pc, which is consistent with the lag-luminosity relation found for normal Seyfert galaxies. The transfer function between the optical and near-IR variability shows that the hot dust distribution is also very similar to other Seyfert galaxies. Therefore, we can conclude that the properties of hot dust in a normal AGN at the same luminosity are comparable to this narrow line Seyfert 1.

Motivation

Grant

no

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