

# The Newly Discovered NIR Features in NGC 7023 and Other Reflection Nebulae

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Recent work on Extended Red Emission (ERE) emitting filaments in the reflection nebula NGC 7023 has revealed the existence of two new, broad dust emission features in the near-infrared. The feature detected at  $1.5 \mu\text{m}$  has been confirmed in subsequent observations of NGC 7023 and is attributed to  $\beta\text{FeSi}_2$ . This would make the  $1.5 \mu\text{m}$  feature the first solid-state Fe feature seen from dust grains. There has been no confirmation of the feature at  $1.15 \mu\text{m}$  in NGC 7023, attributed to silicon nanoparticles. Confirmation of the existence of the  $1.15 \mu\text{m}$  emission feature is especially important with respect to the impact on the current debate on the carrier of ERE, which has been attributed to both silicon nanoparticles and aromatic hydrocarbon clusters. Identifying the material responsible for producing ERE is important as its strength in the diffuse ISM has required the ERE carrier in dust to be a significant component of dust grains in general. Including NGC 7023, we observed four reflection nebulae using SPEX on the NASA infrared telescope facility (IRTF) and obtained long-slit spectroscopic data from  $0.8$  to  $2.5 \mu\text{m}$ . We present our attempts to confirm the  $1.15 \mu\text{m}$  feature in NGC 7023 and to find the  $1.5 \mu\text{m}$  feature in other filaments in NGC 7023 and in other reflection nebulae.

## References:

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