Stellar Emission as a Source of Flux Bias in Debris Disks

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Background

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Debris disks are the remnants of planet formation and can be used to study how and where planets may have formed. When a debris disk is unresolved, an accurate emission model of the host star is required to separate the stellar and disk flux contributions. #AAS233

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Debris disks are observed at long wavelengths to probe the larger grains with facilities such as #ALMA and future facilities such as #ngVLA. Unfortunately, little is known about the stellar emission at these wavelengths, which affects the interpretation of the data. #AAS233

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Why this project is necessary

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Fomalhaut is an A-type star that has a debris disk similar to our Kuiper Belt. Interior to this, IR obs suggest a 2nd disk analogous to our asteroid belt. #ALMA obs of the inner system detected less than expected from stellar emission alone! (where is the debris?) #AAS233

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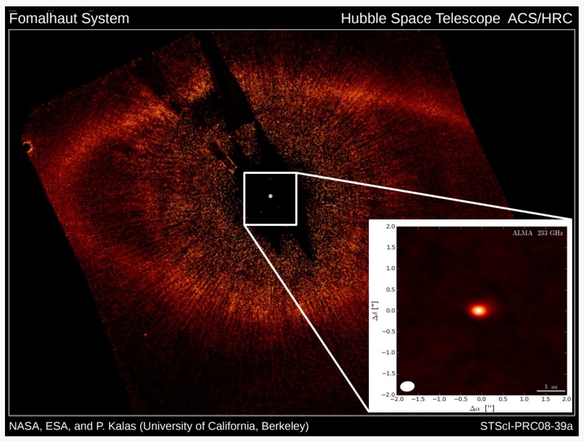

The MESAS Project

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The MESAS Project (Measuring the Emission of Stellar Atmospheres at Submm/cm wavelengths) is an international observational campaign that studies debris-poor stars at long wavelengths w/ #ALMA, #VLA, #JCMT, #SMA, #GBT, #NOEMA and models emission to build stellar templates #AAS233

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Stellar Photospheres

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The brightness temperature spectrum of a star traces the structure of its atmosphere. Sirius A (A-type, debris-poor), Altair (A-type, debris-poor), Fomalhaut (A-type, asteroid belt?), Gamma Lep (F-type, debris-poor) & the Sun (G-type) can be compared on this type of plot. #AAS233

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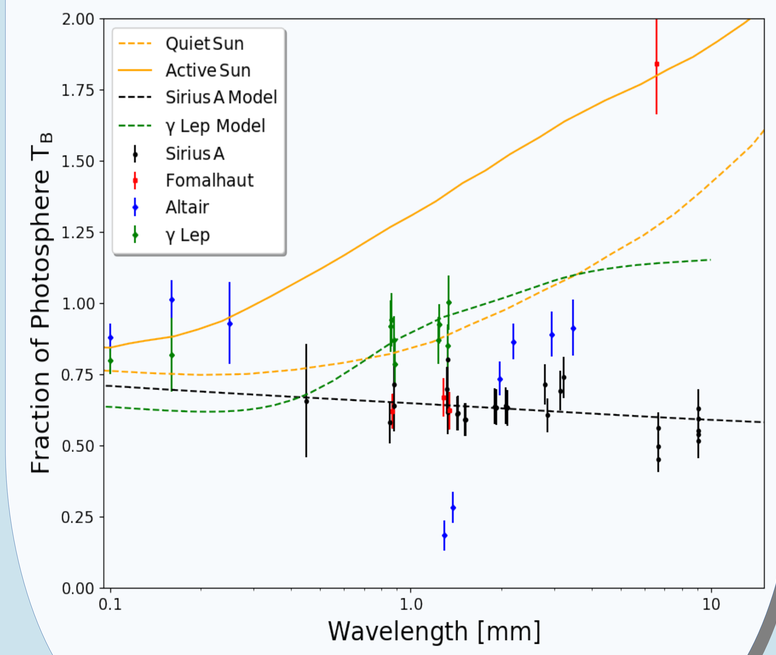

ngVLA to the rescue!

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Current observations of debris-poor stars are largely limited due to the very long exposure times required. The unprecedented sensitivity of #ngVLA will enable a large number of stars within 100 pc to be observed – imperative for MESAS and accurate debris disk studies! #AAS233

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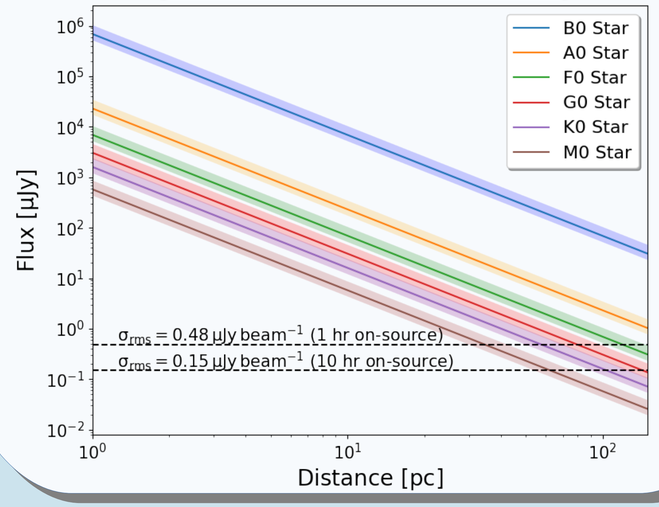

References

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