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Title:Broadband analysis techniques for Herschel/HIFI spectral surveys of chemically rich star-forming regions
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Abstract:The Heterodyne Instrument for the Far Infrared (HIFI) aboard the Herschel Space Observatory has acquired high-resolution broadband molecular spectra of star-forming regions in a wavelength range that is mostly inaccessible from ground-based astronomical observatories. These spectral surveys provide new insight into the chemical composition and physical properties of molecular clouds. In this manuscript, we present initial results from the HIFI spectral survey of the Sagittarius B2(N) molecular cloud, which contains spectral features assigned to at least 40 different molecules in a range of physical environments. While extensive line blending is observed due to the chemical complexity of this region, reliable molecular line identifications can be made, down to the noise floor, due to the large number of transitions detected for each species in the 1.2 THz survey bandwidth. This allows for the extraction of new weakly emitting species from the line forest. These HIFI surveys will be an invaluable archival resource for future investigations into interstellar chemistry. 
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Main heading:Surveys
Controlled terms:Blending - Clouds - Mass spectrometry - Methanol - Molecular spectroscopy - Molecules - Observatories - Stars
Uncontrolled terms:Astrochemistry - Astronomical observatories - Broadband analysis - Chemical complexity - Chemical compositions - Emitting species - Far infrared - Ground based - HERSCHEL - Herschel space observatories - Heterodyne instruments - High resolution -

Interstellar chemistry - Interstellar molecules - Millimeter-wave spectroscopy - Molecular clouds - Molecular lines - Molecular spectra - Noise floor - Physical environments - Sagittarius B2 - Spectral feature - Star-forming region - Wavelength ranges
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