A radio counterpart to a young star with a planetary mass candidate companion?

Abstract:
We have discovered a planetary mass candidate companion to 1RXS J160929.1-210524, a roughly solar-mass member of the ~5-Myr old Upper Scorpius association. The candidate companion, separated by 2.22" or 330AU at ~150pc, has infrared colors and spectra suggesting a ~L4 spectral type and a temperature of 1800(+200/-100)K. Near-infrared spectra provide clear evidence of low surface gravity, and thus youth. Based on the widely used DUSTY models, we infer a mass of 8(+4/-1)Mjupiter. If gravitationally bound, this would be the lowest mass companion imaged around a normal star thus far, and its existence at such a large separation would pose a serious challenge to theories of star and planet formation.

Coincident in position with the above objects is a 5mJy NVSS source. We propose exploratory 21 and 6-cm observations to (i) Determine if the radio source is associated with the host or its candidate companion; and, if so, (ii) verify whether it is sufficiently bright for VLBA to determine a parallax. Note that if the radio emission were from the planetary mass companion, this would generate great interest in its own right.

Authors:

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<thead>
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<th>Status</th>
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<tbody>
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Related proposals:
If succesful, this would lead to a VLBA proposal.

Joint:
Not a Joint Proposal

Observing type(s):
Continuum

VLA Resources

<table>
<thead>
<tr>
<th>Name</th>
<th>Conf.</th>
<th>Frontend &amp; Backend</th>
<th>Setup</th>
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<td>Rest frequencies: 1464.9,1385.1 MHz Bandwidth: 50 MHz</td>
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<td>-21:04:58</td>
<td>J2000</td>
<td>Velocity : 0.00</td>
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<th>Resource</th>
<th>Time</th>
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<th>Subarray</th>
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<td>A/L</td>
<td>0.75 hour</td>
<td>0.1 mJy/bm</td>
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<td>A/C</td>
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<td>A/C</td>
<td>0.75 hour</td>
<td>0.1 mJy/bm</td>
<td></td>
</tr>
</tbody>
</table>

Present for observation: no  Staff support: Consultation  Plan of Dissertation: no