**VLA OBSERVING APPLICATION**

DEADLINES: 1st of Feb., June., Oct. for next configuration following review
INSTRUCTIONS: Each numbered item must have an entry or N/A
E-MAIL TO: propsoc@nrao.edu (different for some Rapid Response Science)
OR MAIL TO: Director NRAO, 520 Edgemont Rd., Charlottesville, VA 22903-2475

(1) Date Prepared:
(2) Title of Proposal: A second maser in IC 10

(3) AUTHORS
(Add * for new location)  | INSTITUTION  | E-mail  | G/U | Students Only
A. Brunthaler  | JIVE, Dwingeloo  | brunthaler@jive.nl  |  |  |
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L.J. Greenhill  | CfA Harvard/Smithsonian  | lgreenhill@cfa.harvard.edu  |  |  |
C. Henkel  | MPIfR, Bonn  | henckel@mpifr-bonn.mpg.de  |  |  |

(4) Related VLA previous proposal number(s):

(5) Contact author for scheduling: A. Brunthaler  
   Address: Joint Institute for VLBI in Europe  
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   7990 AA Dwingeloo, Netherlands
   Telephone: +31 521 596 540  
   E-mail: brunthaler@jive.nl  
   Fax: +31 521 596 539

(6) Students Only 
For Thesis?  Ph.D. Year

(7) Scientific Category:  ○ solar system  ○ galactic  ○ extragalactic  ○ other:
   Rapid Response Science:  ○ Known Transient  ○ Exploratory  ○ Target of Opportunity

(8) Configurations (one per column)
(A+Pt, A, B, C, D, BnA, CnB, DnC, Any)  | B

(9) Wavelength(s)  
(400, 90, 20, 6, 3.5, 2, 1.3, 0.7 cm)  
1.3 cm

(10) Time requested  
(hours)  
0.5 hours

(11) Type of observation:  ○ continuum  ○ spectroscopy  ○ multichannel continuum  ○ polarimetry  ○ solar  
(check all that apply)  ○ pulsar  ○ high-time resolution  ○ Pie Town link  ○ other:

(12) Suitable for dynamic scheduling?  ○ Suitable  ○ Unsuitable

(13) ABSTRACT (do not write outside this space)
We propose to obtain an accurate position of the H$_2$O maser source IC 10-NW. We would like to include this source in our ongoing project to measure the proper motions of the two Local Group galaxies IC 10 and M33. The flux density of our current target source in IC 10 (IC 10-SE) has decreased over the last years from > 1 Jy to ~ 0.1 Jy. On the other hand, IC 10-NW has been more stable since its discovery in the late 1980s at a level of ~ 0.1 Jy. IC 10-NW has also a broader spectrum than IC 10-SE, making it already a better target source for our VLBA observations. We would like to get the position before our next VLBA observation of IC 10 (BB172AE, to be observed soon) will be correlated.

NRAO use only
(08/03)
Observer present for observations?  ○ Yes  ☒ No  Data analysis at?  ☒ Home  ○ AOC or CV (2 weeks notice)

Help required:  ○ None  ☒ Consultation  ○ Friend (extensive help)

<table>
<thead>
<tr>
<th>Spectroscopy only</th>
<th>line 1</th>
<th>line 2</th>
<th>line 3</th>
<th>line 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition (HI, OH, etc.)</td>
<td>H₂O</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rest Frequency (MHz)</td>
<td>22.235</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Velocity (km/s)</td>
<td>-330</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observing frequency (MHz)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlator mode</td>
<td>1A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IF bandwidth(s) (MHz)</td>
<td>6.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hanning smoothing (y/n)</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of channels per IF</td>
<td>128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Resolution (kHz/channel)</td>
<td>48.828</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rms noise (mJy/bm, nat. weight., 1 hr)</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of sources:  1

(If more than 10 please attach list. If more than 30 give only selection criteria and LST range(s.).)

<table>
<thead>
<tr>
<th>NAME</th>
<th>Coordinates</th>
<th>Conf.</th>
<th>λ (cm)</th>
<th>Corr. mode</th>
<th>Bandwidth per IF (MHz)</th>
<th>Total Flux (Jy)*</th>
<th>LAS</th>
<th>Required rms (mJy/bm)</th>
<th>Required dynamic range</th>
<th>Time request (hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC10-NW</td>
<td>00 17 +59.01</td>
<td>BnA or B</td>
<td>1.3</td>
<td>1A</td>
<td>6.25</td>
<td>0.1</td>
<td>&lt;5</td>
<td>&gt;20</td>
<td>0.5</td>
<td></td>
</tr>
</tbody>
</table>

*For spectral line, this should be the total flux at the peak of the line

Notes to the table (if any):

Restrictions to elevation (other than hardware limits) or HA range (give reason):

Preferred range of dates for scheduling (give reason):

Dates which are not acceptable:

Special hardware, software, or operating requirements:

Please attach a self-contained Scientific Justification not in excess of 1000 words. (Preprints or reprints will be ignored.) Please include the full addresses (postal and e-mail) for first-time users or for those that have moved (if not contact author). When your proposal is scheduled, the contents of the cover sheets become public information (Any supporting pages are for refereeing only).

v4.2 8/03