Can ILL compete with the American SNS?

<table>
<thead>
<tr>
<th></th>
<th>D20</th>
<th>GEM</th>
<th>DRAC</th>
<th>SNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>time averaged sample flux</td>
<td>$5 \times 10^7$</td>
<td>$2 \times 10^6$</td>
<td>$10^8$</td>
<td>$2.5 \times 10^7$</td>
</tr>
<tr>
<td>detector solid angle (sr)</td>
<td>0.27</td>
<td>4.0</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>efficiency</td>
<td>1.7</td>
<td>1</td>
<td>18</td>
<td>9</td>
</tr>
</tbody>
</table>

“Efficiency” = sample flux * detector (sr)

Comparison of TOF & CW Diffractometers
Shelter Island (1984) N.I.M. B12, 525
Jorgensen, J.D., Cox, D.E., Hewat, A.W., Yelon, W.B.

- Large focusing D2B/D20 monochromators
- Reactors provide high time-averaged flux
- Wavelength band ~1% for resolution ~0.1%

Monoch. Reactor Detector

• Reactors now have large 2D detectors
• D19-type PSD can cover $160^\circ \times 32^\circ = 1.5$ sr
• Very small samples e.g. high pressure

2mm$^3$ YAG on GEM for ~700 min

~700mm$^3$ Na$_2$Ca$_3$Al$_2$F$_{14}$ on D20 for only 2 minutes!!

Magnetism at 7 GPa on D20, Paris-Edinburgh cell

3 ILL machines for ¼ of all proposals

Can ILL compete with the American SNS?

• Use our natural advantage – time average flux on the sample
• Use big detectors, as on pulsed neutron sources
• Act now – don’t wait for the SNS to take away our lead