

IV. DISCUSSION

In order to comment on the validity of current models of the atomic structure of metallic liquids, it is necessary to have high quality data for selected alloy systems. This should be available when all the results from the current MIR/MIM/QUELD series are available. It is anticipated that this will be in late 1998. However, it appears that the results to-date offer support for the following conclusions, namely: -

- 1) The "D" value with the "raw" g-jitter of MIR (corresponding to MIM Latched) is similar to that obtained in this alloy in 1992 on STS 57. **THUS AS FAR AS LIQUID DIFFUSION IS CONCERNED, BOTH SPACE VEHICLES PROVIDE SIMILAR REDUCED GRAVITY ENVIRONMENTS.**
- 2) The "D" value is reduced by approximately a factor of 2 by reducing the gravity field from 1 g to that of the STS or MIR.
- 3) The reduction of g-jitter afforded by MIM, reduces the measured value of 'D' substantially, perhaps by a further factor of 2.
- 4) The use of a MIM on manned space platforms operating in low earth orbit (LEO) is essential for obtaining accurate values of " Measured. These should permit a detailed examination of the current understanding of the structure(s) of liquid metals and semiconductors. Such an understanding should eventually permit the accurate prediction of "D" values for all alloy systems, a feat only possible as a result of the judicious use of LEO processing.