

Another method is to use the SpaceWire time code features. A standard SpaceWire interface provides four signals: Tick In, Time In, Time Out, and Tick Out. When one end of the SpaceWire link asserts "Tick In," some small amount of time later (a few micro-seconds), Tick Out at the other end of the link is asserted. So there is a "virtual" wire connection over the SpaceWire link that can do synchronization (with an uncertainty and latency on the order of a few microseconds). The Time In signal provides an interface to send a 6-bit time code that is transparently inserted in the stream of data and control tokens being carried across the link, and recovered and presented on the Time Out at the destination without needing to create a special "time message."

This work was done by James P. Lux of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1). NPO-47437

Techniques for Solution-Assisted Optical Contacting

A document discusses a "solution-assisted contacting" technique for optical contacting. An optic of surface flatness $\Lambda/20$ was successfully contacted with one of "moderate" surface quality, or $\Lambda/4$. Optics used were both ultra-low expansion (ULE) glass ($\Lambda/4$ and $\Lambda/20$) and fused silica ($\Lambda/20$).

A stainless steel template of the intended interferometer layout was designed and constructed with three contact points per optic. The contact points were all on a common side of the template. The entire contacting jig was tilted at about 30° . Thus, when the isopropanol was applied, each optic slid due to gravity, resting on the contact points.

All of the contacting was performed in a relatively dusty laboratory. A number of successful contacts were achieved

where up to two or three visible pieces of dust could be seen. These were clearly visible due to refraction patterns between the optic and bench. On a number of optics, the final step of dropping isopropyl between the surfaces was repeated until a successful contact was achieved.

The new procedures realized in this work represent a simplification for optical contacting in the laboratory. They will both save time and money spent during the contacting process, and research and development phases. The techniques outlined are suitable for laboratory experiments, research, and initial development stages.

This work was done by Glenn De Vine, Brent Ware, Danielle M. Wuchenich, Robert E. Spero, William M. Klipstein, and Kirk McKenzie of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1). NPO-47963