History of the Three Beams Meeting

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The International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), also known at the "Three Beams" conference, meets for the 60th time this year. One wonders what the small group of electron-beam welding enthusiasts who gathered at the first meeting in 1959 would think of the present day conference. At the time of the first Beams meeting IBM had only just recently introduced the first all-transistor computer, the Model 309 (see Fig. 1), and the laser had yet to be invented (Fig. 2a). While the integrated circuit was just invented the year before (Fig. 2b), one wonders how many of the attendees were even aware of it? The staggering progress since those days leaves one wanting for superlatives. In my talk I will review the first 60 years of the meeting from the point of view of patterning technology for information processing and storage.

Figure. 1 The IBM 608 computer, first introduced in 1955, was hot technology at the first Beams meeting. It was the first commercial computer to be completely transistorized (no vacuum tubes!!). It contained a whopping 3000 tiny germanium transistors, each about the size of a paper clip and individually soldered. It could perform more than **4000 additions per second**! The machine could store up to **40 nine-digit numbers** and programs containing up to **80 steps**! Data input from punch cards could be processed at a blazing speed of **155 cards/minute**! Retail price in 1957 was a very affordable $83,210. (http://www-03.ibm.com/ibm/history)

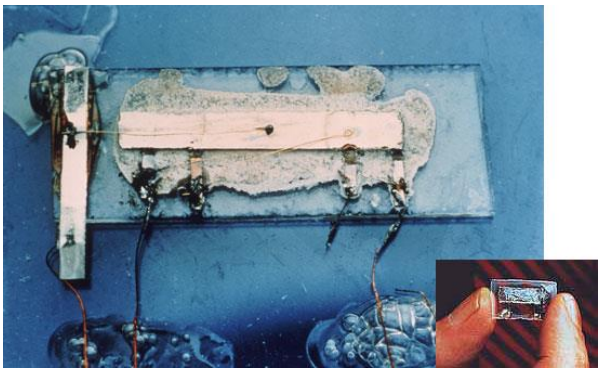
(a)  (b) 

Figure. 2 (a) Theodore H. Maiman, who invented the first laser in 1960 (one year after the first Beams meeting. (https://www.aip.org/history/) (b) The first integrated circuit, invented by Jack Kilby in 1958, just one year before the first Beams meeting. (http://history-computer.com/ModernComputer/Basis/IC.html)