Short Summary on Large Telescopes Part of JD8

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As one of the two chairs of this Joint Discussion, first I would like to give my thanks to all invited review speakers for their high-level and splendid talks. And also I would like to give my thanks to Dr. Johannes Andersen for his spending much time and energy to organize this meeting.

Looking back, from 1609 Galileo inventing the astronomical telescope to 1993,in 384 years, there were only two astronomical telescopes with aperture larger than 5m: the Russia 6m telescope and U.S.A. 5m Hale telescope. But from 1993 to the present, in only ten years, ten telescopes with aperture more than 8m have operated for astronomical observation. How great progress this is! These telescopes are ground-based telescopes and work in optical and IR waveband. Similar unprecedented achievements have also been obtained in radio telescopes and space missions. All these telescopes and instrumentation enable astronomers to study celestial bodies from the whole electromagnetic spectrum.

By using various existent telescopes and instrumentation some events in the early universe have been observed. More than one hundred Jupiter-like planets have been found. These stimulate the astronomers and popular people strongly to hope to observe more events in the early universe including the first generation of galaxies to be assembled and to shine in the dark universe i.e. to see the dawn of modern universe, to research star and planet formation, to study black hole, to explore the earth-like planets in nearby stars. Telescopes much larger than existent 8-10m ground-based telescopes and 2.4m HST, and various other telescopes are needed for these researches. The progress in technology creates the possibility to build various much larger telescopes. Here let me only cite ground-based telescope as an example: the success of segmented- mirror Keck telescope created a possibility to build much larger telescopes, and the progress of adaptive optics showed the diffraction-limited image could be obtained at least in IR waveband. By using larger ground-based telescope not only more light energy could be collected, but also the higher resolution can be obtained. Many Future Giant Telescope projects have been put forward and are being developed, such as ground-based 100m OWL, 30m GSMT and CELT, Euro-50; space-based JWST, Herschel, Darwin, TPF, XEUS; radio waveband ALMA, SKA, and many others.

Now every two years SPIE holds astronomical telescopes and instrumentation conferences. This may be the main reason why for many years IAU Commission 9 has had almost no science meeting in these areas. IAU is the most important organization of the international astronomical community. Telescopes, instrumentation, and techniques are an important part of astronomy. New telescope projects are driven by astronomical goals. I think IAU should also hold astronomical telescopes and instrumentation conferences. These conferences should lean toward science goals, and they could make astronomers understand the recent development of telescopes and techniques. These meetings will be complementary with the SPIE meetings. Now IAU leaders have taken a serious about this. Dr. Andersen, the former

IAU General Secretary, as a representative of IAU attend the SOC of JD8 and Prof. Ekers, the President-Elect of IAU, will give the closing talk for JD8 tomorrow. JD8 is a new beginning. I hope from now on there will be more symposia or colloquia on telescopes and instrumentation sponsored by IAU. And I hope IAU will achieve great successes in promoting the international collaboration on Future Giant Telescopes.