

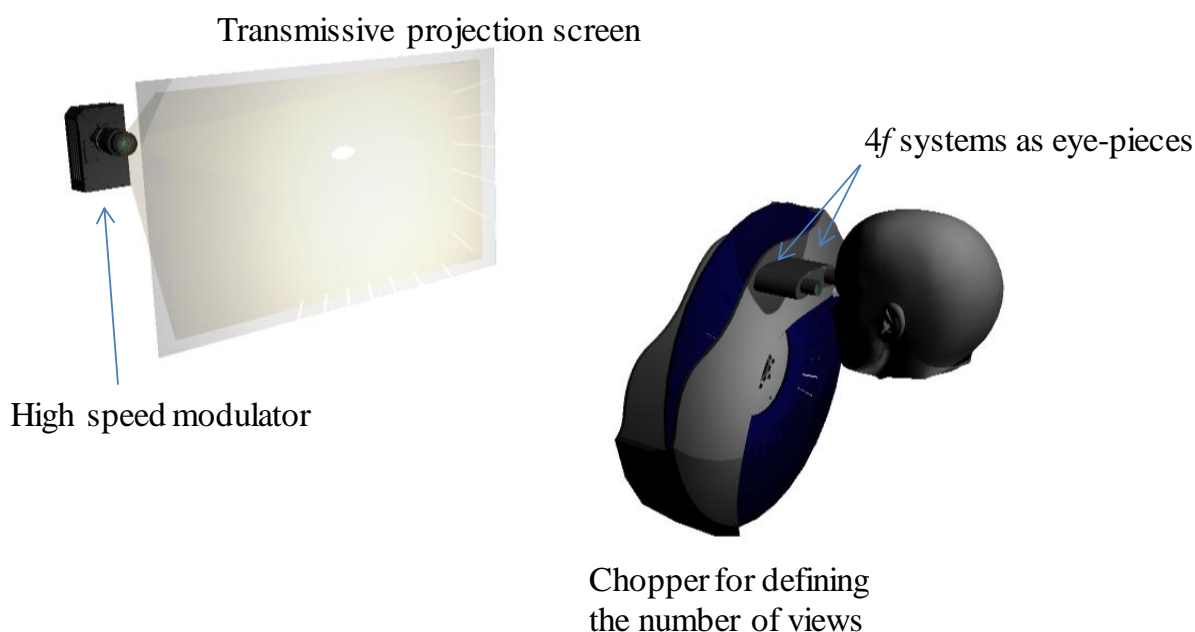
## Super multi-view system with variable number of views

*Chulwoong Lee<sup>1</sup>, Hosung Jeon<sup>2</sup>, Junho Seok<sup>3</sup> and Joonku Hahn<sup>1</sup>*

School of Electronics Engineering, Kyungpook National University, Buk-Gu Sankyuk-Dong, Daegu 702-701, South Korea

Tel.:82-53-950-5514, E-mail: [jhahn@knu.ac.kr](mailto:jhahn@knu.ac.kr)

Recently, technology of three-dimensional (3D) display is regarded as one of the most popular research issues and various approaches have been tried to improve the quality of 3D display[1-3]. In this paper, we propose an interesting super multi-view display. It is designed for special purpose that the human cognition of 3D contents is tested. Therefore, it is different from conventional 3D displays at the point of view that the number of views in our system is controllable. Our system has distinct structure. A projection part is constructed with a high speed digital micro-mirror device (DMD) and the observer watches the projection part through  $4f$  systems as eye-pieces. An optical chopper is placed at the end of eye-pieces. The optical chopper plays a function to define the direction of the rays from the projection part. By synchronizing the DMD and the position of the opening of the chopper, we can define the number of views. Our system has a great advantage that the effect of the number of views can be evaluated at the same system. We expect that it will be useful to objectively clarify the principle of human cognition on 3D display.



**Fig. 1. The schematic of super multi-view system with variable number of views.**

### Acknowledgement

This work was supported by Samsung Future Technology Fund of Samsung Electronics Inc. under Grant Number SRFC-IT1301-07.

### References

1. J. Hong, Y. Kim, H.-J. Choi, J. Hahn, J.-H. Park, H. Kim, S.-W. Min, N. Chen, and B. Lee, "Three-dimensional display technologies of recent interest: principles, status, and issues," *Appl. Opt.* **50**, H87-H115 (2011).
2. N.S. Holliman, N.A. Dodgson, G.E. Favalora, and L. Pockett, "Three-Dimensional Displays: A Review and Applications Analysis," *IEEE Trans. Broadcast.* **57**, 362-371 (2011).
3. Y. Takaki, "Super Multi-View Display and Holographic Display," The 22nd Annual Meeting of the IEEE Photonics Society (LEOS), Belek-Antalya, Turkey (2009).