平成22年1月4日

応用物理学会北海道支部
会員各位

応用物理学会北海道支部

**講演会のお知らせ**

下記講演会を開催いたしますので、多数ご参加下さいますようご案内申し上げます。

演題：Detecting exoplanets with a vector vortex coronagraph on a well-corrected 1.5 m aperture
講師：E. Serabyn 氏
（JPL(NASA/CALTECH) 上級研究員）
日時：平成22年1月21日（木） 15:00～16:00
場所：北海道大学工学部物理工学系会議室I （A3-62）
主催：応用物理学会北海道支部

講演の要旨

Observations of faint exoplanets near bright stars require both small inner working angles and high throughputs, and phase mask coronagraphy can provide both. Moreover, the vortex phase mask coronagraph is predicted to have a close-to-ideal theoretical performance. Recent work in developing phase mask coronagraphy and in achieving the needed wavefront control on the Palomar 1.5 m “well-corrected subaperture” will be described. Because of their great potential, we have recently focused on vector vortex coronagraphic phase masks, in which a focal-plane azimuthal phase spiral is generated by a rotationally symmetric half-wave plate. Our vector vortex masks already perform very well both in the laboratory, with a demonstrated infrared contrast at 3 λ/D of about $10^{-6}$, and a narrowband visible contrast of a few $10^{-7}$, and on the telescope, where a Ks band vector vortex mask has allowed the detection of the innermost of HR8799's three known planets, which for our system lies at 2 λ /D. Phase masks can thus provide access to observations at smaller angles with existing telescopes, and to space-based exoplanet observations with reduced-diameter telescopes. Further improvements to our vortex masks are planned to reach the rejection levels ultimately needed for terrestrial exoplanet detection from space.

世話人　馬場　直志
北海道大学大学院応用物理学専攻
電話：011-706-6718　nbaba@eng.hokudai.ac.jp