Near-infrared observation of the solar corona during the 1998 solar eclipse

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Since 1960's several observers reported a near-infrared excess emission superposed on the coronal continuum at 4 solar radii. This pronounced brightness feature in the solar corona is often discussed as evidence for the existence of a dust ring. However, results of recent observations in K-band show disappearance of the excess emission, while the only J-band observation in 1983 suggests a positive result. We have carried out near-infrared observations of the J and K band brightness during the solar eclipse on February 26, 1998. The solar corona was observed over a field of view of about 14 solar radii.

We report that the data show no obvious indication for the existence of dust rings but rather indicate a smooth spatial distribution of dust near the Sun.

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This pronounced brightness feature in the solar corona is often discussed as evidence for the existence of a dust ring. However, results of recent observations in K-band show disappearance of the excess emission, while the only J-band observation in 1983 suggests a positive result. We have carried out near-infrared observations of the J and K band brightness using an open flying aircraft during the solar eclipse on February 26, 1998. The solar corona was observed at an altitude of approximately 5.73km with a low atmospheric straylight level over a field of view of about 14 solar radii.

We report that the data show no obvious indication for the existence of circum-solar dust rings but rather indicate a smooth spatial distribution of dust near the Sun.