non-uniformity in the sensitivity of the SSC. We have made use of multiply observed fields in the SSC, co-added IRAS survey scans, and optical images of SSC fields to further evaluate the reliability and completeness of the Catalog.

In 52 pairs of high galactic latitude overlapping SSC fields, 720 out of 1020 sources were "confirmed", that is detected in both fields of the pair. Sources with multiple band detections confirmed at the highest rate, 98% at 12μm, 99% at 25μm, 94% at 60μm and 94% at 100μm, compared with 78%, 94%, 56% and 49% for single band detections at 12, 25, 60 and 100μm, respectively. The confirmation rate has a strong dependence on flux density, exceeding 90% above 100 mJy at 12 and 25μm, 170 mJy at 60μm, and 550 mJy at 100μm, and rapidly declining towards fainter flux levels. Eighty-seven percent of the SSC sources which have been positionally associated with objects from other catalogs were detected in both fields.

To distinguish between reliability problems and completeness limits for the sources which failed to confirm, co-addition of all available IRAS survey scans, and PDS scans of optical images from the Palomar and ESO Sky Survey plates at the location of non-confirming sources were made. SSC sources which failed to exhibit likely optical counterparts or co-added survey detections were deemed unreliable. The reliability of the high latitude subset of the SSC, covering 271 deg2, is estimated to be 98%, >99%, 92% and 95% at 12, 25, 60 and 100μm, respectively.

Session 30: HEAD Invited Session
10:00-11:30 am, Wyndham Ballroom A

30.01 Recent Results from Ginga
K. Koyama (ISAS)

Ginga has observed nearly 100 galactic and extragalactic sources. Galactic sources observed include compact binaries, stellar sources, and SNRs. Extragalactic sources include AGNs, clusters of galaxies, and normal galaxies. Wide range spectra of several QSOs have been obtained, showing a wide distribution of spectral indices. Some QSOs reveal an iron emission line. Selected topics from the observational results will be presented. The results of the observation of SN1987a will also be given.

30.02 The Soft Gamma-Ray Repeaters
E. E. Fenimore (Los Alamos National Laboratory)

At least three objects have been identified that make up a new class of high energy transients, the Soft Gamma-Ray Repeaters (SGR). These objects have typical photon energies of 30 KeV, last about 0.1 s, and repeat; in contrast to the classical gamma-ray bursts which have typical energies of 300 KeV, last tens of seconds, and are not known to repeat. These objects are also clearly different from the rapid x-ray burster which is softer and shows a definite correlation between the intensity of the bursts and the time since the last burst, whereas, the intensity-time relationship for the SGRs appears random.

The best studied of these objects is SGR1806-20 which has had more than 100 repeats over several years. For many of these events we have spectral coverage from 2 to 200 KeV with 12 channels. The spectra of the individual bursts are remarkably similar to each other and resemble the spectra from hard accreting pulsars such as 4U0115+63. This suggests that these objects are also accretion driven phenomenon on a magnetized neutron star but the burst represents isolated accretion rather than steady accretion.

30.03 The Geminga X-ray Counterpart and a Blue Optical Identification
J.P. Halpern, D. Tytler (Columbia U.)

We report the identification of the X-ray source 1E 0030+178, itself a candidate for identification with the high energy γ-ray source Geminga, with a blue object inside the Einstein error circle. Deep CCD photometry shows that the star in question has g = 25.14, g-r = -0.32 and is the bluest object in the field by a wide margin. We have also analyzed the Einstein X-ray spectral data. Contrary to previous claims, no upper limit to the distance can be derived from the X-ray spectrum, since the column density could be as high as 1.4x1022 cm^-2. Both of these new results support previous models in which Geminga was predicted to be a Vega-type pulsar, since placing Geminga at a distance of 500-1000 pc would mean that the absolute luminosities in each of the optical, X-ray, and γ-ray bands would be nearly the same as those of Vega.

The absence of radio emission requires that the radio beam be narrower than the X-ray beam, which is consistent with most pulsar models, as well as with the pulse profiles of Vega itself. The optical and X-ray emission together are consistent with a single temperature blackbody spectrum of T = (4.3 ±1.7)x10^5 K, although the X-ray data alone are best fit by T = 1.08±0.20 K. If coming from the full surface of a neutron star, the lower temperature implies d ≤ 100 pc, whereas the higher temperature requires both that d < 2 kpc and that the optical emission have another source. Since the latter scenario is more likely, the optical emission, and perhaps part of the X-ray emission, could be due to a very compact and as yet unresolved (<2") synchrotron source. The large ratio of γ-ray to X-ray flux requires that the γ-rays be produced far from the surface of the neutron star, as is true in most models for radio pulsars. If this interpretation is correct, many of the unidentified COS-B sources could be young pulsars whose radio beams do not intersect the earth.

Session 31: Active Galaxies & QSOs
10:00-11:30 am, Wyndham Ballroom B

31.01 The Near-Infrared Structures of the Centers of Luminous IRAS Galaxies and Seyfert Galaxies
S.A. Eales, E.E. Becklin, F.W. Hodapp, D. Simmons, C.G. Wynn-Williams, (Institute for Astronomy, University of Hawaii)
I.S. McLean, (UKIRT)

The introduction of infrared arrays allows us to observe the structures of galaxies without the obscuring effect of dust. We have been using the JPL/RISEX SWIR infrared array on the UKIRT 3.8-m telescope and IRCAM on UKIRT to look at two classes of galaxy: the luminous infrared galaxies discovered by IRAS, and Seyfert galaxies. The IRAS galaxies frequently contain reddened near-infrared sources that have 2.2 μm surface brightnesses greater than the