

TITLE: The Hyper-luminous Infrared Galaxy IRAS 09104+4109: An extreme brightest cluster galaxy

Science PI: Ken Cavagnolo (Univ. of Waterloo/Michigan State University)

Cost Proposal Investigator and science co-I: Megan Donahue (Michigan State University)

SALARIES AND FRINGES

The cost proposal PI is Megan Donahue of Michigan State University. Ken Cavagnolo is the science PI for this project, a 75-ksec observation of a hyperluminous infrared galaxy which is also a brightest cluster galaxy. When he submitted the Chandra proposal, he was a graduate student in the physics and astronomy dept. at Michigan State University. He completed his PhD work with the cost proposal PI, who is a co-I for this proposal, and as faculty is the cost proposal PI. As of Sept 1, 2008, he began a postdoctoral position in Waterloo University in Waterloo, Ontario, with Prof. Brian McNamara. To continue his role as project leader, he will return to Michigan State University. MSU will appoint him to a 3 month research associate position for the summer of 2009 (exact dates depending on the timing of the data acquisition.) He maintains two residences, one in Canada and one in East Lansing, Michigan. (His wife remains here for career reasons.) The budget proposed here allocates 3 months of a postdoc salary and FICA benefits (7.65%). The take-home salary is larger than that of a typical MSU astronomy postdoc because, as a partial-year appointment of less than 6 months, he is not eligible for health insurance benefits. We request one month of summer salary for Megan Donahue, including FICA. Donahue will contribute to the X-ray data analysis, the multi-wavelength comparison and discussion, and will co-write the paper.

TRAVEL

Travel for Donahue to visit Canada (one trips, \$290/trip for transportation, 4 days each trip, \$230 per diem, including hotel, meals, and incidentals) for \$1210 (per diem rates obtained from CONUS). We request travel funds to support Cavagnolo to attend a meeting in the US, the feedback in galaxies, groups, and clusters of galaxies meeting in Wisconsin June 1-5, 2009. The standard CONUS rate is \$70/day lodging and \$39/day for meals. Air and ground transportation is \$500; meeting registration estimated to be \$250. We are requesting partial support for Cavagnolo to attend the 2010 AAS meeting in Washington DC (\$595, towards RT airfare from Lansing, registration fee, and 1 night hotel, full meeting funded through multiple grants.)

SUPPLIES AND PUBLICATIONS

We are also requesting support for supplies (backup hard drive, to be retained at MSU, software and hardware upgrades) \$1000. This estimate is based on historical averages. We will use existing equipment to complete the data analysis, but we will need

to make small hardware purchases (the occasional power supply or RAM upgrade) in order to complete our data analysis. Publication costs are estimated for 9 pages at \$110/page, 1 color figures (\$100 each), and two poster prints (\$110), one for each meeting.