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AKARI and AME: A look at microwave dust emission via the Infrared

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Rapidly spinning dust particles having a permanent electric dipole moment have been shown to be a likely carrier of the anomalous microwave emission (AME), a continuous excess of microwave flux in the 10 to 90 GHz range. Due to the overlap between the CMB and the galactic foreground, this topic is requiring cosmologists to consider the ISM with more care. Tiny dust grains, possibly polycyclic aromatic hydrocarbons (PAHs), are one suspect for the AME carrier, due to their size and abundance. We present data from AKARI/Infrared Camera (IRC) due to the effective PAH band coverage of its $9 \mu\text{m}$ survey to investigate 98 AME candidate regions identified by the Planck Collaboration et al. (2014). We supplement AKARI data with Infrared Astronomical Satellite (IRAS) data, and Planck High Frequency Instrument (HFI) data at 857 and 545 GHz and carry out a modified blackbody fitting, We estimate the optical depth of thermal dust at $250 \mu\text{m}$, and compare to AME parameters. We also show plots of each band's average intensity for all 98 regions vs. AME parameters. We find a positive trend between the optical depth and AME. In general, the MIR correlates less strongly with AME than the FIR. We cannot offer strong support of a spinning dust model, however the results highlight a need for better understanding of PAH band emission and magnetic dipole emission from dust.