The broad-band spectrum of 3C 120 observed by BeppoSAX
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abstract We study a broad-band X-ray observation by of the broad-line radio galaxy 3C 120. The
primary X-ray continuum is well described by a power law with the photon index of $\Gamma \sim 1.85 \pm 0.05$ and a
high-energy break or a cutoff. The obtained e-folding energy of $\sim 100-300$ keV corresponds to $kT \sim 50$ keV
in thermal-Compton models. A soft X-ray excess is found at a statistical significance of 98%. Our physical
best-fit model of the excess is optically-thin emission from an extended plasma (with a luminosity of $\sim 2\%$ of
the total X-ray luminosity), which interpretation is supported by an independent finding of an extended soft
X-ray halo in 3C 120. We find a moderate Compton reflection component together with a moderately broad
Fe K lines with an equivalent width ($\sim 10^2$ eV) fully consistent with the strength of reflection, indicating
their origin in an optically-thick accretion disk extending relatively close to the central black hole. We observe
strong spectral variability during our 2-day observation with $\Gamma$ varying from $\sim 1.7$ to $\sim 2$ and correlated
with the soft X-ray flux. The variability is very well modeled by thermal Comptonization in a hot plasma
irradiated by a variable UV flux. Both a hot patchy corona outflowing with a mildly relativistic velocity
away from a cold disk and a hot inner accretion flow overlapping with the cold disk are viable geometries.
The presence of an outflow in the first case and an overlap between the hot and cold phases in the second
case are required by energy balance and the observed strength of Compton reflection.