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SINBAD: A synchrotron infrared beamline at DAFNE

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The optical design of the infrared synchrotron radiation beamline SINBAD, proposed for DAFNE, the new collider of Laboratori Nazionali di Frascati, will be presented. Infrared radiation will be extracted from a bending magnet under an angle of 50×50 mrad, and will be more brilliant than that of a black body source by a factor of 100 at a wavelength of $100 \mu\text{m}$. Different layouts, which transfer the radiation to a diamond-film window, and focus it again on the entrance of an interferometer at a distance of about 18 m from the source, were examined. Their optical performances obtained by ray tracing simulation, were compared with each other. The most efficient optical layout turns out to consist of four plane mirrors and of three aspherical mirrors. The possibility of using a wave guide for transmitting radiation from the first focusing mirror to the interferometer will be also discussed.