Source/Cause	Hazard	Parameters	Effect	Danger Zone	Mitigation
Earth's atmosphere	Drag	Air density	Shortens orbital lifetime	LEO	Go to higher orbit
		Ballistic coefficient			Periodically adjust orbit
	Atomic oxygen	mass	degrades spacecraft surface	LEO and beyond	atmospheric ozone $O+O \Rightarrow O_2$
Being in a vacuum	Out-gassing	molecule or material released	can cause electronics to malfunction	960 km	Bake materials
					ensure materials don't have trapped gasses
	Cold-welding	part material temperature	materials bind and cause failure	960 km	use lubricants avoid moving parts
	Inability to shed heat	temperature radiation	Things get hot quirky	vacuum 960 km	big radiating surface areas
Past and present missions	Space debris	size	physical change to spacecraft	Above 65 km LEO	track debris
		speed			minimize debris
		collision (angle) point			use stronger material
		composition			carry replacement materials
Solar system	Micrometeoroids	size	shortens orbital lifespan	outside 65 km	strong materials
		speed			
		collision point			track micrometeroids
		composition			
The sun	Radiation	$10^1 - 10^2$ rad for biological matter above 10^2 for other	human injury	outside magnetosphere	materials stronger to radiation.
			part degradation		use magnetic or electrostatic sheilds
			over heating		
	Solar pressure	spacecraft surface area	orbital Perturbations	outside magnetosphere	use solar pressure as motive force ⇒ Solar Sailing
Solar wind and flares	Charged particles	mass of particles	charging	outside mesosphere	replace with stronger material
Galactic cosmic rays		Temp. / Energy	sputtering		magnetic field or specific material layer
Van Allen radiation belts		wave length Plank's Constant	Single Event phenimenon		some material or shield to prevent ultrafast electrons to cause electrical overload.
		Distance	Total dose Effect		

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