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Physical Properties of and Evolution of The Local Interstellar Medium

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The very local interstellar medium has been proposed as a source of the small scale cosmic ray anisotropy. This region, also known as the Local Interstellar Cloud (LIC), is the closest interstellar medium and interacts with the solar wind to create the heliosphere. The current state of the LIC, however, has been determined by processes in the more distant local interstellar medium which includes a variety of regions ranging from the hot, very low density Local Bubble to the warm Complex of Local Interstellar Clouds (CLIC) to the cold, dense gas in the Local Leo Cold Cloud. We will discuss the physical properties of the LIC and the local ISM and our sources of information on them. We also discuss our modeling of the origins and evolution of Local Bubble and CLIC. The Local Bubble is found to require at least two supernova explosions for its creation and the CLIC, including the LIC, can be explained as originating as cold dense clouds embedded in a lower density warm medium which was overrun by supernova blast waves. The magnetic field configuration that results from this evolution could be important for understanding cosmic ray anisotropy.

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