log He/H = 10.96 ± 0.05, log O/H = 8.10 ± 0.10, log Ne/H = 7.5 ± 0.2 and log Ar/H = 5.8 ± 0.2. The O, Ne and Ar appear underabundant by a factor of 5, relative to solar abundances. These results indicate that PN 6 −41.1 is a population II object with chemical composition comparable to the SMC H II regions and very similar to the only known C poor halo planetary nebula DDDM-1.

From nebular parameters we have estimated that the distance to the object is in the range 2.8 kpc ≤ d ≤ 18 kpc, corresponding to a galactic plane distance range of 1.9 kpc ≤ | z | ≤ 12 kpc. On the other hand, from the characteristics of the central star, we derived a distance d ≅ 7.7 kpc, with | z | ≅ 5.1 kpc, which we consider is the most probable distance to the object. This distance estimate places the nebula in the galactic halo. The complete version of this work appears in *Revista Mexicana Astron. Astrof.*, **17**, 1989.

AGE STRUCTURE OF REFRACTORY INTERSTELLAR DUST AND ISOTOPIC CONSEQUENCES

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We compute the mean age of dust particles using a sputtering and recycling Monte Carlo model developed by Liffman, and Clayton, (1988, *Proc. Lunar Planet. Sci. Conf.*, **18**, 637). Each particle mean age is defined not as the time it has existed, but rather as the mass-weighted existence times of its parts (core plus shell) at t = 6 Gyr when the Solar System formed in our models. We show that galactic evolution generates a correlation between particle size and mean age. This is a mean correlation, applying to large numbers of particles binned according to size rather than to individual particles, whose mean ages fluctuate statistically. The cosmochemical consequence is that if interstellar particles can be dynamically sorted into separate size populations during the aggregation history of solar system bodies, the collections of larger grains will constitute matter that is chemically older than collections of smaller grains. This macroscopic age difference generates isotopic anomalies by virtue of the time dependence of the secondary/primary nucleosynthesis yields (Clayton, 1988, *Ap. J.*, **334**, 191). The most important example is that an aggregate of refractory oxides is several percent richer in ^{16}O than is the solar gas, ranging up to 10% richer in Al_2O_3 if Al is also concentrated into larger-than-average particles. This history may explain the 5% richness of ^{16}O within meteoritic Al-rich inclusions. We compare our results with three different prescriptions for the sputtering of interstellar dust.

IUE OBSERVATIONS OF WOLF–RAYET BINARIES IN THE GALAXY, THE LMC AND THE SMC

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Due to the large extent of the winds of W–R stars, atmospheric eclipses are evident at *UV* line frequencies in binary systems containing an O–star companion. In 8 of the galactic WR's thus far studied with the *IUE* satellite, the presence of very numerous, closely spaced lines of Fe IV, Fe V and Fe VI lead to pseudo-continua which are most evident during the atmospheric eclipses, even in the lowest inclination binary systems. We report on the results of *IUE* observations of the systems HD 36402 in the LMC, and HD 5980 and Sk 188 in the SMC where no evidence is found for the iron pseudo-continua, although atmospheric eclipse effects are relatively strong at line frequencies corresponding to ions of N IV, C IV and O IV. This is consistent with the lower heavy-metal abundances in the Clouds with respect to the Solar vicinity.

THE DISTANCES TO HIGH VELOCITY CLOUDS: A MODEL FOR THEIR CONFINEMENT

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The assumption that the High Velocity Clouds are embedded in the hot galactic gaseous halo, and in pressure equilibrium with it, permits the determination of a distance to the clouds.

Being in pressure equilibrium with the surrounding medium means that the total external pressure equals the pressure within the cloud. That is, we are assuming no expansion or contraction of the cloud.

In this model the external pressure has two components. One is the thermal pressure of the hot surrounding gas, and the other is the ram pressure due to the drag of the material they find in their trajectories. This external pressure depends on the distance because the distribution of the coronal gas is not uniform.

From the parameters observed for each individual cloud (column density, line width, angular size and velocity with respect to the galactic standard of rest) we obtained the internal pressure as a function of distance

too. Thus, imposing the condition of equilibrium between the internal and external pressure, one can find the distance to the cloud.

We applied the model to a set of eighteen individual clouds located in the southern galactic hemisphere, and we found one to three solutions, or distances, (for each cloud) at which the internal pressure equals the external pressure. They represent the distances at which the clouds can be confined by the external pressure.

We used the condition that the observed velocity must be smaller (or equal, at most) than the free-fall velocity at the distance obtained, to choose the right one among the different solutions.

We showed also, that they can remain in pressure equilibrium during their trajectories.

GAS AND STARS IN TWO BCD: II ZW 33 AND MKN 314

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We present preliminary results of deep broad band CCD images and long slit low resolution spectroscopy of the two BCD galaxies II Zw 33 and Mkn 314. The evolutionary status and their probable origin are discussed. Mkn 314 is suggested to be an isolated compact young burst with metal poor gas content. On the other hand, II Zw 33 appears to have an old stellar population with some localized burst possibly due to the interaction with other extended objects around it.

EXTENDED EMISSION AND STAR FORMATION IN I Zw 18

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We report the results of deep emission-line and line-free continuum imagery of the super-metal-poor blue compact galaxy I Zw 18, which has the lowest metallicity of any star forming galaxy known. The observations were made with the Wide-Field PFUEI CCD system on the Palomar 60-inch telescope operated at an effective f/ratio of f/1.66, and reached an emission measure of approximately 20 in Hα and surface brightness of about 25th magnitude arcsec^{-2} at 6450 A. Comparison the *VLA* 21-cm H I maps reveal that the star formation in the main body of I Zw 18 occurs on the NE side of the largest H I cloud and a faint Hα halo with embedded clumps extends out to distances of about 30 arc seconds in both the NE and SW directions (~ 1.5 kpc). Hα emission is also found in the stellar system noted by Zwicky to the NW of the main body, which is coincident with a H I cloud and linked to the main body by a very faint emission bridge. Red continuum images reveal three distinct elongated stellar regions in a line at PA = 312° extending as far out as 1 arcmin (~ 3 kpc) from the main body of the galaxy. Possible scenarios regarding the nature of the gas and history or star formation in I Zw 18 are discussed, as well as some implications which these imagery results have regarding the chemical composition and evolution of I Zw 18.

NEW LIST OF BLUE GALAXIES

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We present a new list of blue galaxies obtained on Eastman Kodak spectroscopic plate emulsion 103aD with *UBV* filters. The plate is centered at $2^h\ 30^m$, and −6.5° (1950). These plates were originally taken for the observational program of faint blue stars in regions the South Galactic Pole by Haro and Luyten (1962).

NONLINEAR EVOLUTION OF GALAXIES WITH INCREASING DENSITIES

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Some bursts of star formation are thought to be associated with situations in which a galaxy density is increasing. Examples include protogalaxy collapse, mergers, inflow of gas into a galactic nucleus, or accretion of intergalactic gas. We have examined a model for the evolution of the star formation rate (SFR) and other properties of galaxies with increasing density using one-zone cloud fluid equations describing an extension of the Oort cycle, for which the equilibrium state would give a SFR which increases monotonically with density. However, the calculations show that the energy input associated with the density increase generally dominates the evolution, and forces the system far from its normal equilibrium to a state in which cloud collisions are disruptive rather than coalescent. This results in a large decrease in the SFR that persists throughout the period of density